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THE CARE AND FEEDING OF PREMATURE INFANTS.*

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The care and feeding of premature infants is an exceedingly interesting and at times a very difficult task. In our institution all new born babies are turned over to the department of pediatrics immediately after birth, and for this reason we have had the opportunity to care for and observe a fair number of premature infants. The following report has to do with observations on one hundred and twenty consecutive cases.

In recent years, numerous reports have emanated from certain institutions, with almost unlimited wealth at their disposal, and with most elaborate equipment for the care of premature infants. They describe specially constructed nurseries, where temperature and humidity may be automatically kept at a certain figure; water heated bassinets, and specially constructed ambulances. There are available for these institutions, nurses particularly trained in the care of premature infants. For the feeding of such infants, breast milk is available in ample supply. Reports such as these are very interesting, and instructive, but are not particularly helpful to the general practitioner, or to those institutions unable to afford such an outlay. It may not be amiss at this time to venture a report from our hospital, where facilities for the care of premature infants are most inadequate.

We have no specially prepared rooms for the reception of premature infants. With us, such infants are forced to spend their early days in a small wash room, connected with our main nursery. This room is equipped with only one window for ventilation, and in the morning hours, ten to fifteen full term babies receive their daily morning toilets in this small room. Lack of space makes over-crowding a necessary and a serious evil. Naturally we are not proud of such equipment, and mention it for the consolation of much smaller institutions, and for general practitioners. We believe that fairly good results can be obtained without the aid of expensive equipment.

It is not always an easy matter to determine whether an infant is, or is not premature. The term, premature, as commonly used, refers to those infants born three weeks or more before the usual termination of pregnancy. So far as the care and handling is concerned, we might rightly include those babies who are congenitally weak. A large baby, who is a weakling may require a great deal more care than a healthy small baby prematurely born. So far as this report is concerned, we have included no baby weighing more than 2500 grms. (5 lbs. 8½ ozs.). All infants in this group have been declared premature by the department of obstetrics, from the standpoint of menstrual history.

The causes of prematurity, so far as we were able to determine from our records, were quite numerous. There were nine cases of placenta previa, with labor induced in most cases. Eighteen cases resulted from toxemia of pregnancy, with labor induced in many instances. Syphilis appeared to be the cause of five premature deliveries. Multiple pregnancy resulted in the premature delivery of seven pairs of twins. Deformed pelvis made the induction of labor necessary in only three cases. Premature rupture of the membranes occurred twice; hydramnios once; typhoid fever once; and pyonephrosis once. Labor was induced in two cases on account of tuberculosis, and a chronic abdominal infection in the mother respectively.

Regulation of Temperature

All new born infants have the heat center very poorly developed, and this is particularly true with premature infants. If these infants

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are to survive, every effort should be made to maintain normal body temperature. We have found the following procedure quite satisfactory. When a premature infant is born it is received immediately into warm sterile blankets. External heat is applied by means of hot water bottles. The few seconds required for tying and dressing the cord may be sufficient to cause an alarming drop in temperature. A clamp on the cord effectually controls hemorrhage until we feel it safe to expose the baby sufficiently long to tie the cord and apply umbilical dressings. Just as soon as the premature infant is admitted to our nursery, the rectal temperature is taken. It is then retaken at intervals of from one-half to one hour, until we are satisfied that the baby has reacted properly. The temperature is taken beneath the covers with no exposure to the baby. We have found it very essential to maintain the rectal temperature at 98° to 99° if possible, and we have found it possible if the following procedure is carried out. We make use of two thermometers. An ordinary house thermometer is placed beneath the blankets, and this should register between 85° and 95° F. A second clinical thermometer tells us what the infant's actual temperature is at any time. A temperature of 100° F. means that too much external heat is being applied, while a temperature of 97° F. means that the water in the hot water bag is getting cold. If this procedure is adopted, one should have little difficulty in regulating temperature in the premature infant. If hot water bottles are to be used, they must be placed between the blankets and care must be taken that a body burn does not result. It is very easy to burn the delicate skin of premature infants, if hot water bottles are allowed to remain in the same place over too long a period. After the baby has reacted and the temperature has remained between 98° and 99° F. for several hours, a quick mineral oil bath may be given, and a premature jacket applied. The jacket should fit snugly under the chin, and cover every part of the body except the face. We make a practice of keeping all premature infants in a jacket until they have attained a weight of 2500 grms. (5 lbs. 8½ ozs.). We have found these jackets very satisfactory although we do believe that they predispose to folliculitis if the baby has been allowed to become over heated. Our premature infants receive a quick mineral oil bath every other day, and this is continued until the baby is as lusty as the normal full term baby. The daily weighing and oil bath should not consume over two minutes. We have also found it essential that a premature's temperature must be kept between 98° and 99° F. throughout its entire stay in the nursery, for sudden extremes of temperature in either direction interfere materially with progress.

Feeding

That breast milk is the food of choice is agreed upon by all writers on this subject, and we are in accord with this view. We do not agree, however, with the general statement that is so frequently made, that good results cannot be expected when artificial feeding is attempted.

Due to certain policies of administration in our hospital, breast milk has been available for only those prematures vigorous enough to nurse their own mothers. It so happens that in this series of one hundred and twenty cases, only eight babies were exclusively breast fed.

If artificial feeding is to be successful it must fulfill the following requirements: (1) It must be available in concentrated form. (2) It must be easy to digest. (3) It must permit proper growth and development. (4) It must be clean. (5) It must, in so far as possible, protect against infection. It has been our experience that lactic acid milk fulfills the first four requirements most satisfactorily, and it is the chief burden of this paper to give our experience with this method of feeding. We have included in our observations on feeding, every baby that lived as long as twenty-four hours, and have excluded all babies born outside the hospital, having received any type of feeding prior to admission. We give, therefore, the results of feeding in eighty-nine instances.

There were only eight babies exclusively breast fed. The average weight of these babies was 2149 grms. (4 lbs. 11½ ozs.), and the average stay in the hospital was fourteen and five-tenths days. The average gain per day for this group of breast fed babies was thirteen and eight-tenths grms. The smallest baby in this group weight 1644 grms. (3 lbs. 10 ozs.),

and the largest baby weighed 2494 grms. (5 lbs. 8 ozs.).

There were sixty-six babies fed on a combination of breast milk and lactic acid milk. These were the babies who were allowed to nurse, and were complemented with lactic acid milk at each feeding, unless a certain amount of breast milk was obtained from the mother. A very large percentage of this group received such small amounts of breast milk that they might almost be said to have been artifically fed. Many were entirely weaned before leaving the hospital. The average weight of this group of babies was 2195 grms. (4 lbs. 13½ ozs.), and their average stay in the hospital was twenty-three and four-tenths days. The average gain per day was thirteen and three-tenths grms. The smallest baby in this group weighed 1275 grms. (2 lbs. 13 ozs.), and the largest baby weighed 2500 grms. (5 lbs. 8 ozs.).

There were eleven babies fed exclusively on lactic acid milk mixture. The average weight of these babies was 1620.1 grms. (3 lbs. 9 ozs). The largest baby in this group weighed 2410 grms. (5 lbs. 5 ozs.), and the smallest baby weighed 1065 grms. (2 lbs. 5½ ozs.). The average stay in the hospital was forty-one days, and the average gain per day was twelve and nine-tenths grms. From the above figures it will be seen that the smallest babies in this series of one hundred and twenty cases were artificially fed.

	Number of Babies	Days in Hospital	Gain Per Day	Average Admission Wt.
Breast Fed...	8	14.5	13.8 gms.	4 lb. 11½ oz. 2,149 gms.
Breast Plus Lactic Acid Milk.....	66	21.7	12.9 gms.	4 lb. 13½ oz. 2,195 gms.
Lactic Acid Milk.....	11	41	12.9 gms.	3 lb. 9 oz. 1,620 gms.

Although we have fed lactic acid mixtures to a large number of premature infants, we can recall not a single instance where it was not well tolerated. Due to the fact that it can be fed undiluted, lactic acid milk is particularly useful in the feeding of premature infants. It has been our custom to feed premature infants at the end of twelve hours. We start all babies at this time on lactic acid milk in suitable amounts. The larger babies are fed at intervals of four hours, and less robust babies at intervals of three hours. If the baby is sufficiently vigorous to swallow properly, it is fed with a rubber tube attached to a medicine dropper. Those babies too weak to swallow are fed by gavage, and we have found this method of feeding a life saving measure in many instances. Babies strong enough to nurse are taken to the breast at the end of thirty-six to forty-eight hours and every precaution is taken that they do not suffer from exposure at this time. If the caloric requirements are not satisfied, all nursing babies are complemented with lactic acid milk, all babies being weighed before and after each nursing. With the older methods of feeding, it was common experience to find marked fluctuation in daily weight. Since we have been using lactic acid milk this has not been our experience, the weight curve being constantly on the up grade. Of course, no baby can be fed by rule of thumb, and this is particularly true in premature infants. Each child is a problem in itself. We believe that no matter what type of artificial feeding is to be employed, the measure of success is largely dependent on a thorough understanding of that particular type of feeding.

Prevention of Infection

Premature infants are particularly susceptible to infections of various sorts. Infants which can be carried along most satisfactorily, so far as growth and development are concerned, may at times succumb to an infection which in a vigorous full term baby need not cause any particular concern. Infections such as acute coryza, otitis media, impetigo, and pyelitis, may be of most serious consequence when they occur in premature infants. In our series of cases, impetigo occurred in eight instances, and no deaths were attributable to it. Congenital syphilis was diagnosed five times and three of these infants died in the hospital. Pyelitis developed in three instances with one death. Nasal diphtheria occurred in each of twins, both infants dying. There were two cases of abscess of the abdominal wall, with recovery. Furunculosis occurred once, and folliculitis four times with no serious consequences. Otitis media developed in two instances, with no serious complications. Thrush

occurred once, and acute coryza once, with recovery in both instances.

Prognosis

We have included in this report of one hundred and twenty infants, every child that was admitted to our nursery breathing. Of these one hundred and twenty infants, thirty-six died, giving a mortality of 30 per cent. There were ninety-four infants that lived over twenty-four hours, and eighty-four of these babies were graduated from the hospital giving a mortality of 10.6 per cent. We are not ashamed of this figure, and if it is better than any other report, we are frank to admit that we enjoy a decided advantage, in that the majority of these babies were born in the hospital.

It is interesting to note the apparent relationship of the cause of prematurity to death in the infant. Six babies were born of mothers sufferings from placenta previa, while five of the babies that died were born of luetic mothers. Toxemia was very conspicuously associated with death in the infant in eight instances. Premature rupture of the membrane occurred in the mothers of two babies dying in twenty-four hours. Other condi-

Hospital Number	Weight in Grams	Maternal Conditions	Age at Death	Born	Infections and Other Causes
69,361	1,675	Placenta Previa Breech Delivery	Less than 24 hours	In	
67,635	2,040	Placenta Precia Breech Delivery	Less than 24 hours	In	
69,394	2,310		Less than 24 hours	In	Congenital Heart
65,161	1,469	Syphilis Breech Delivery	Less than 24 hours	In	Syphilis
4,217	2,228	Difficult Labor.....	Less than 24 hours	In	Asphyxia
52,673	1,905	Toxemia	Less than 24 hours	In	
54,640	1,356	Syphilis	Less than 24 hours	In	
54,910			Less than 24 hours	In	
66,336	1,145	Syphilis	86 days	Out	Nasal Diphtheria Cervical Abscess Furunculosis
66,335	1,065	Syphilis	67 days	Out	Nasal Diphtheria Abscess thoracic wall
67,665	2,025	Placenta Previa	7 days	In	Intracranial hemmorhage
67,230	1,590		Less than 24 hours	Out	Intracranial hemmorhage
66,718	1,240		Less than 24 hours	In	
66,672	1,260		117 days	Out	Congenital Anomaly of cecum, with obstruction
	Not weighed	Premature rupture of membranes	Less than 24 hours	In	Not viable
65,175		Infection of Gall-bladder	Less than 24 hours	In	
60,113	780		Less than 24 hours	In	Not viable
52,091	1,300	Toxemia	14 days	In	
60,781	848	Syphilis	Less than 24 hours	In	
51,956	805		7 weeks old on admission, lived 11 days	Out	Improper feeding at home
51,472	1,049.9		4 days	Out	Improper feeding at home
51,002	2,041	Hydramnios	Less than 24 hours	In	
63,035	1,125	Toxemia	8 days	In	Pyelitis
61,256	1,580	Toxemia	Less than 24 hours	In	
52,453	1,780	Placenta Previa	9 days	In	
55,974			Less than 24 hours	In	
56,140	1,575	Toxemia	2 days	In	
57,739		Toxemia	Less than 24 hours	In	
57,957	953	Typhoid Fever	Less than 24 hours	In	
58,908	1,635	Placenta Previa	Less than 24 hours	In	
70,615	860		Less than 24 hours	In	Twin
70,614	1,355		Less than 24 hours	In	Twin
50,163	1,404	Placenta Previa	Less than 24 hours	In	
69,988	1,075	Toxemia	Less than 24 hours	In	
71,008	2,240	Toxemia	Less than 24 hours	In	
71,162	1,450	Premature Rupture Membranes	Less than 24 hours	In	

tions, maternal and otherwise, associated with the death in the infant, are shown in the mortality table. Out of eleven babies born outside of the hospital, six died, giving a mortality of 54 per cent.

We have not given this report of our experience to advocate any particular method of handling or feeding. Some of the methods employed by us were the result of necessity, others were the result of our own judgment in the matter. But we believe the results of our experience are sufficiently interesting to warrant placing this report on record.

DISCUSSION.

DR. F. D. WILSON, Norfolk: This paper is of great importance, because it demonstrates that it is not necessary to have elaborate equipment in order to get good results in handling premature babies. It also demonstrates the fact that it is not necessary to start the baby on very dilute milk mixtures or whey, as has been our custom in the past. The facilities, as has been noted, were very limited, but the temperature control was watched at all times and the baby was not allowed to get chilled. He was kept warm from the moment he was born and was not allowed to have a temperature fall of more than a degree or so during the first weeks of his life. Just two things are important to think of: first of all keeping the baby warm and, second, giving him an adequate amount of food. Of course, the smaller prematures are unable to nurse. If the mother's milk can be expressed manually and fed to the child, all well and good; but if the mother's milk is inadequate in quality or quantity the best possible food to give the child, in addition to the mother's milk obtainable, is sour milk. For the past three years I have been feeding all small babies, whether premature or not, sour milk. There seems to be no advantage for either of the two forms (bacterially-soured milk or milk soured by the addition of lactic acid.) They seem to gain as much on lactic acid milk as on breast milk. It is notorious that premature babies will often gain more, when they are a few months old, than normal babies. The sugar content of the lactic acid milk is brought up to approximately the sugar content of mother's milk, and that probably accounts for the greater gain in these children.

To keep them warm the doctor uses the premature jacket. I like a cape better than I do the jacket—a cape with drawstrings, because you can get it up closer around the neck. Hot water bottles should be watched very closely, because if you get them too hot they will shoot up the child's temperature to 105 or 106 or 108. I think feeding the child at intervals of two or two and a half hours, for the first few weeks of life at any rate, will give an even more satisfactory gain than shown in this series, because the capacity of the child's stomach is limited.

Now as to the prevention of infection; it is well known that these little babies are very subject to infections, particularly respiratory infections, so it is imperative that the attendants should have no respiratory infection whatever, either nurse or physician, because a simple cold in an attendant may occasionally give rise to bronchopneumonia in a small baby.

When these children are brought in from the outside they have been chilled; the temperature is down sometimes to 95 or 94, or below. I should like to have Dr. Waddell shed some light on this point.

DR. GREER BAUGHMAN, Richmond: I have listened to these papers with a great deal of interest. The reason why the premature babies get by at the University Hospital is that you have a good obstetrician. If you want to save your premature babies, you must begin by delivering them without cerebral hemorrhage. If you do not believe in episiotomy as a routine, I beg you to episiotomize for the prevention of cerebral hemorrhage. Make the opening big enough so they can just drop through without bruising their heads.

I think it is very well to get the baby oiled before wrapping him up. A little grease on the outside probably helps to protect the skin and acts like a suit of underwear.

To keep up the temperature of the body, which of course is essential, use a little electric stove. With that you can keep the temperature rather more uniform than with a hot water bottle. People that live in the country can use that method, because they also have electricity. We have found the electric stove best of all for that purpose.

Just one word about feeding. Be careful about putting premature babies to the breast! the little premature is not strong enough to suck. Don't think that because it is at the breast it is getting enough food; weigh it before and after nursing to be sure that it gets enough.

I disagree with the last speaker in that I think the more premature the greater the interval of nursing. I would rather have an ounce of food well digested every four hours than an ounce poorly digested every two hours.

We have found that acid milk will make the premature grow where their own mothers' milk will not. It seems to me that the premature babies fed on acid milk do better than those babies that are fed upon pumped breast milk. The babies that are able to nurse their mothers are usually not very premature.

DR. LAWRENCE T. ROYSTER, University: I cannot refrain from talking on this subject so dear to my heart. This work was done in our service at the University of Virginia hospital. There are one or two points I want to stress. The first was brought out in the paper, but I want to stress it a little more. A premature child must not be allowed to have a drop in temperature. Some of these were brought into the hospital when for some hours we could not register the temperature with any instrument in the hospital. Calculating the temperature as best we could, we judged it was about 91. Dr. Blackfan says he never had raised a child with a temperature as low as 90. If the mother is not so awfully bad off as for you to anticipate death immediately, let the mother look after herself and take care of that premature. As to whether they are worth saving; I think they are, absolutely.

The premature child's growth urge is greater than the normal child's. Foreign protein stimulates the growth urge more than the normal food. I hate to disagree with so many eminent men, but the premature child does better on sour milk than on pumped mother's milk.

I have tried long intervals of feeding and short intervals, and I believe most of them do better on four hours than three hours. I can remember way back yonder when we diluted the mother's milk for prematures or gave whey. Then the short interval was necessary, but today, with the concentrated feed-

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ing and the concentrated protein, the longer interval is better; and these babies do better and there is steadier gain on the four-hour interval.

I want to say just one more thing. I am the proudest man on the face of the earth to be in a department that can give such a record as Dr. Waddell has given today.

NON-DRAINING PURULENT OTITIS A SOURCE OF DANGER TO THE HEART IN CHILDREN.*

By LITTLETON DAVIS, M. D., Roanoke, Va.

While statistics now show many diseases, notably the contagious diseases and tuberculosis, on the decrease, heart diseases and deaths therefrom are apparently on the up-grade. Certainly, it seems to me that I am discovering a far greater number of damaged hearts in children than formerly. Possibly because of our increased knowledge of children's diseases we are now more on the alert for carditis than heretofore.

I shall doubtless bring out nothing new. However, any point of attack aimed at reducing this number I feel is amply justified.

Granted that heart disease or endocarditis is or has been an infectious process, we are almost compelled to admit that such infection must enter at some more remote point and is carried by lymph and blood stream to this site. Supposing this to be the case, we have two methods by which such infection may take place: 1. An acute overwhelming infection throwing large quantities of bacteria into the heart's blood; or, 2. A closed non-draining focus throwing a small amount of infection into the blood over a longer period of time. In children at least, the latter method of infection has held first place for some time and hence the intensive search for foci in the teeth, tonsils, and sinuses with indifferent therapeutic results. It seems to me that the danger to the heart lies not so much in the fact that these foci may be present about the head and neck, but rather whether such foci are afforded easy natural drainage, or are susceptible of prompt discovery and good artificial drainage.

Where pus can readily discharge outward, as in gum boils or tonsil crypts, from an ear drum or sinus opening provided this takes place, there is little danger to the heart and lungs. On the other hand, in bone sinuses having larger cavities draining through small apertures or often not draining at all, the best condition for a heart infection is maintained, since there is no place for it to go save directly through the lymph stream into the subclavian, thence to the lungs and heart. In the mastoid antrum and middle ear in infants and young children the above conditions are most admirably fulfilled.

We are frequently seeing children under five and often from one to two years of age with damaged hearts. As many of these are discovered accidentally, many heart cases in later life can possibly be accounted for in this way.

The most common and also the most neglected of all infections in children of this age affecting a bone sinus is a purulent otitis media. It offers the poorest drainage compared to its frequency of infection of any upper air sinus. The middle ear is infected from general or specific infections directly through the tubes or secondarily by coughing up of infectious material from bronchi or lungs as in whooping cough and pneumonia.

From Fall to Spring this is the most common illness of children. It is often treated by neglect and household remedies. Far too often it is neglected by physicians too, being passed off as an indigestion or cold or "flu". We do not begin to realize what may be the far reaching bad effects of neglecting these infections.

I am frank to say that I think both the laity and we have long neglected what is a common source of danger to the heart and lungs in those children having an earache and a temporary fever. Pain is only an early symptom, so is much fever. Fortunately, in some of the neglected cases the ear drum ruptures with a discharge of pus. Just as often, however, it only oozes through a minute opening or does not open at all, the pus standing for weeks in a closed cavity, thus offering the best opportunity for pulmonary and heart infection. There is only a short chain of deep cervical lymph nodes between this infection and the heart, while the valve leaves and numerous cordae tendinae structures of this organ act as a kind of seine or net to catch what may have passed the cervical and bronchial lymph nodes.

In neglected and non-draining purulent otitis the child is usually restless at night, is pale, has a poor appetite, with usually slight evening fever and often no fever at all. Frequently, a bronchitis is associated or the child

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gives history of having had bronchitis or pneumonia or a contagious disease. With the above symptoms a systolic apex heart murmur is sometimes present.

The appearance of the drum membrane varies according to several factors: 1. The length of time the infection has been present; 2. Whether the drum has previously opened and reclosed; or 3. Whether partial drainage is being established through the tubes.

In old non-draining otitis the drum is a dull grayish or reddish yellow, like a half-done biscuit with rounded edges and depressed center. If the drum has previously been oozing pus, it will have to be brushed clean, when it will appear a bright red and bulging. If no outward drainage has been afforded, although forward drainage is being established, the color is the same as in the first case excepting that the drum is becoming wrinkled from a release of pressure after bulging.

Purulent otitis has since the advent of influenza become far more frequent than formerly. The causes present in the order named are common colds, influenza, whooping cough, measles, scarlet fever, and pneumonia.

In regard to the heart murmurs that occur with purulent otitis and with the above named infections in which an otitis is so frequently present, I am becoming more and more skeptical of considering them as merely anemic or functional in character, but rather as a result of a low grade secondary heart infection, this later in itself being sufficient to keep up the anemia of the patient rather than being secondary thereto.

In going over my records of contagious diseases, notably influenza and scarlet fever, in which cases heart murmurs are so frequent, I was impressed with the large number of such cases also having had a purulent otitis. At the time, however, I did not check up the relation between the two.

The incidence of heart infections in children apparently following otitis and pulmonary infections is sufficiently large, I believe, to bear strongly on the large number of damaged hearts seen in later life and to point to one way at least of reducing that number. That there is a peculiar lack of immunity in some families to the so-called rheumatic heart infection, or a low grade contagion which amounts to the same thing, is illustrated in two families that I recall, one in which there is a boy of eight with a rheumatic mitral lesion, a girl of six with the same ushered in with chorea, and a baby of three months dying of the same lesion. In the other family is a child of three with chorea (no heart lesion) following otitis, a boy of ten years with a heart lesion, and the father about fifty with a recently developed carditis.

There are many other sources about the head and throat which may become non-draining foci, and therefore, perhaps of equal danger. They should receive the proper attention. Purulent otitis, however, is the most common and the most frequently neglected of all such infections. No physician should haphazardly undertake the responsibility of treating these ear infections in children without the proper knowledge or the proper equipment for doing so, and yet this is an almost daily occurrence.

The merely red drum membrane should not be opened, as a rule, even if bulging slightly under five days unless pain is constant and unrelieved by other methods. An otitis that is draining through the tube can do with watchful waiting. All those previously described, however, as not draining should have wide drainage through the drum, not a puncture, and it is just as important to keep the opening open. Vacuum suction or any other treatment designed to facilitate drainage may help. Any other treatment is of secondary importance to outward drainage and the prevention of other infections going in. Adenoids, of course, must be removed.

An important point in the prevention of the remote pulmonary or heart infections is to examine the ears always in from one week to two weeks after an earache, or after the contagious diseases, especially influenza. If parents can become educated to this and if we will equip ourselves properly and take the time and patience which these little patients require, I believe that many crippled hearts can be avoided for truly here "A stitch in time saves nine."

The following are a few illustrative cases:

Case 1.—C. C., boy, eighteen months old, had earache which mother treated twice during winter. Had discharging ear one week before present attack. Is pale, has slight fever, and soft systolic murmur, oozing pus from one drum, other one bulging under an old infection. Both incised with good drainage and closure in about three weeks. Child

continued pale for two months, and after two years' standing, heart murmur disappeared, and child seems quite normal.

CASE 2.—J. L., two years old, supposed to have had "flu" in January, 1925. Had cough for a month with fever at times, slept poorly, is now pale, has cough, and a general bronchitis with a soft systolic murmur at apex. No fever, ear drums dull, grayish yellow, bulging, no recent pain. Both ears contained old thick, creamy pus. Bronchitis and cough cleared in three days, ears drained about two weeks. Child is still pale and shows heart lesion now two and one-half years later.

CASE 3.—Boy, fifteen months old, bottle fed rachitic baby. Had cold with otitis in March, 1927, and as otitis was apparently clearing up was discharged three days later. In May, child brought in for dieting because of poor appetite, and although the child had been on cod liver oil and proper diet with plenty of sunshine, he was unnaturally pale. A soft murmur was present which now in October is pronounced and is undoubtedly a definite heart lesion.

CASE 4.—Boy, aged eight, gives history of several ear infections at three and four years of age, with prolonged discharges and paracentesis at one time. A mitral lesion was found while going over lungs at beginning of whooping cough. This persisted for two years when boy contracted scarlet fever and an otitis purulenta which later was drained at once. Child made good recovery, but still carries his heart lesion now at twelve years of age.

CASE 5.—Girl, aged three, gives history of purulent otitis at one to two years of age. In January, 1924, attack of arthritis with mitral regurgitation in which heart lesion appears to be an old one. One year later, in January, 1925, child developed a cold with slight fever lasting about three days, during which time one ear drum became slightly reddened. About three weeks later a slight aortic regurgitation was noted. The child is now six years old and is going steadily downward. At no time has there been a sore throat or obvious pus in the tonsils or other demonstrable focus or site of infection or a contagious disease.

614-615 *Shenandoah Life Building.*

DISCUSSION.

DR. H. S. HEDGES, Charlottesville: I am glad of an opportunity to commend this paper to the general practitioner. I do not know any branch of children's diseases that I think is more sadly neglected than the diseases of the ear, and I think one of the most dangerous drums to get in a child is that self-same yellowish drum that is not red and from which there is no definite discharge. I think the reason why the general practitioner does not take care of these ears better is because he cannot see them. A man not trained in ear work does not see them well without an otoscope. The electrically lighted otoscope has opened up a whole new field. If you men who have heard this paper this afternoon will provide yourselves with otoscopes, you will find a whole new field opened up to you.

Because the child is not crying, because it has no temperature, does not mean that inflammation is not there. The otoscope is so small, you have the light where you need it, and the electrically lighted otoscope is so easy to work with that there is no excuse at least for not making a diagnosis. I shall go one step further and say there is no excuse for a man in general practice, far away from aurists, not to open ears himself. With a little practice he can easily do it and save a vast deal of trouble and suffering for his patients.

DR. DAVIS, closing the discussion: I thought while writing this paper, it should be of especial interest to physicians in the country who, though far removed from specialists, can, with a good direct lighting otoscope, so acquaint themselves with the appearance of the drum membrane as to diagnose and drain these infections when needed. It is often surprising how quickly a localized bronchitis or the signs of what is apparently a beginning pneumonia will clear up after a paracentesis with free discharge of pus from infected ears. Entirely too many of these infections are at present being overlooked, and I believe many of the lower respiratory and some heart infections can be avoided by taking care of the ear infections at the proper time.

BRONCHOGRAMS IN THE STUDY OF PULMONARY DISEASE.*

By DEAN B. COLE, M. D.,
and
L. J. WHITEHEAD, M. D.,
Richmond, Va.

Bronchography was attempted by Chevalier Jackson in 1905. Since this trial several substances have been used as contrast media. In 1922 Sicard and Forestier introduced iodized oil, which was named lipiodol, into the tracheobronchial tree. Lipiodol is a preparation of poppyseed oil containing 40 per cent iodine. It possesses the unique property of being opaque to X-ray, and thus may be used to delineate the trachea, bronchi and finer divisions of the lung parenchyma. The time of elimination varies. It usually disappears within three weeks. It has, however, been observed in the lung sixty-five days after injection. In bronchiectasis it gives a characteristic picture and shows the typical clubbing of the bronchi. In diseases of the trachea and bronchi, for example, bronchial fistula, the diagnosis is easily made following the introduc-

*Read at the fifty-ninth annual meeting of the Medical Society of Virginia, in Danville, October 16-18, 1928.

tion of iodized oil. In chronic bronchitis and some cases of lung abscess, diagnosis is more difficult. Its use is limited in acute abscess of the lung; in these cases its injection may do harm. It has a very limited use in pulmonary tuberculosis, but in certain cases with questionable cavities it is very helpful. We have found it particularly helpful in differentiating between small localized pneumothorax and cavity. However, should the cavity be filled, the use of lipiodol is rather unsatisfactory. An effort should be made to empty this before the injection is done. Unless there is a very definite indication for its use, we believe lipiodol should never be used in acute or progressive tuberculosis. The information gained should offset any damage that might be caused by the spread of the existing tuberculosis. It is most helpful following thoracoplasty. In this way, as in no other, one can determine accurately the amount of collapse and whether or not there are still existing uncollapsed pockets.

Of the methods of introduction of the oil, we prefer and recommend the supraglottic or transglottic method. We prefer this method as it is comparatively simple, without danger, and the results are entirely satisfactory. The soft palate and base of tongue are swabbed with 10 per cent cocaine solution and trachea is sprayed with a 1 per cent solution. Three to five minutes later, with the patient seated, facing the operator, a medium sized catheter, which is attached to a metal syringe containing 20 c.c. warm iodized oil, is passed through the larynx into the trachea. The oil is then slowly injected with the patient inclined towards the affected side or the side on which it is desired to introduce the oil. The catheter should be long enough to reach just below the vocal cords but short enough not to be cumbersome. A laryngeal mirror is used, thus making it possible to see the oil empty into the trachea, and the possibility of injecting oil into the esophagus is avoided. The position of the patient is important as it is in this way that the distribution of the oil is controlled.

E. Archibald and A. L. Brown called attention to many dangers in the use of lipiodol. They mention the possibility of local sepsis, laryngeal edema, absorption of oil through the stomach, spreading the existing infection, and the possibility of iodinism. There have been many series of cases, covering hundreds of injections, with but few complications or untoward symptoms as the result.

In our series of more than one hundred injections, we have had no fatalities and have seen but one patient showing any evidence of reaction. In this case we were not certain that the symptoms were due to any manipulation or reaction from the oil. Great care should be exercised in the use of lipiodol. This drug is of unquestionable value in the diagnosis and treatment of lung disease and one should not be deterred from its use by the occasional accident that has been reported.

Professional Building.

DISCUSSION.

DR. GARNETT NELSON, Richmond: I am sorry that the slides did not show up a little better. I have had the good fortune to see them before, and they show that the work Dr. Cole is doing in making these bronchograms is quite as good as any being done anywhere.

The paper Dr. Cole presented is so condensed, there is so much in it, that we cannot stop to discuss it to get out of it what we want and shall have to wait until it is published.

I wish to commend Dr. Cole for his enterprise and industry in learning how to do these things and teaching us how to do them here in Richmond. For some reason we were not doing bronchograms, did not know how or were afraid to do them, until he taught us.

Another thing I want to speak of is the simplicity of this work. Of course, it cannot be done carelessly, but information can be obtained with bronchograms that cannot be obtained in any other way. It is not a very difficult thing; the technic of getting the catheter down is easily gained; and it is a guide to cures that cannot be otherwise accomplished.

DR. COLE, closing the discussion: There is one point Dr. Nelson brought out, and that is the question of the ease of using the lipiodol. It is a simple sort of procedure. There are two things that are necessary. One is that you know how to use a laryngeal mirror, and the other is that you do not become frightened too easily. Sometimes these patients will get a cocain poisoning. You will have to stretch them out, but you can still give the lipiodol.

A great number of these were done for treatment purposes. These the nose and throat men have seen; they cough all over you. These it is necessary to get thoroughly cocainized before injecting the lipiodol.

Another point, you should get your X-ray fairly promptly. The patients become frightened and breathe very rapidly, and sometimes it is necessary to get two or three sets of films.

We worry and fret trying to make life do what we think it ought to do. Oftentimes we'd gain greater happiness if we learned to be more nonresistant—if we learned to accept cheerfully what comes.—*Selected.*

TULAREMIA IN VIRGINIA.*
With Report of Three Cases.

By STAIGE D. BLACKFORD, B. S., M. D., University, Va.
and
W. E. BRAY, B. A., M. D., University, Va.

The first cases of tularemia known to have occurred in Virginia were in 1920 in Rockbridge and Augusta Counties. However, the earliest case recognized from this state was in Cumberland County in 1923. The first case reported in the literature was in Chesterfield County in 1924. To date there are thirty nine cases in which records are available. A tabulation of these cases is presented in Table I. Undoubtedly other cases have been recognized, but records on these were not obtainable.

The distribution of the infection has been fairly uniform throughout the state with perhaps a slight predominance in the Piedmont area. Map shows the distribution in graphic form. The thirty-nine cases reported herewith have occurred in twenty counties, as shown in Table II. All of the infections, in which the source has been definitely identi-

TABLE I

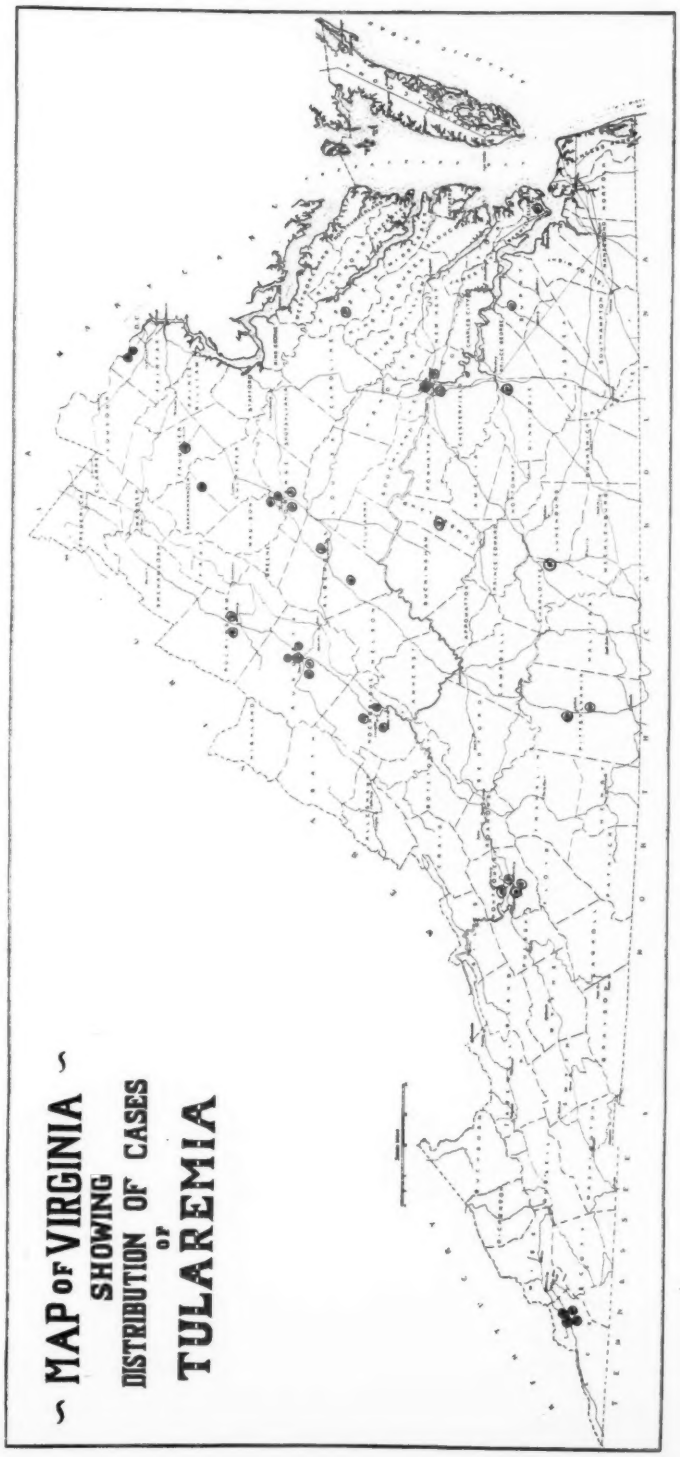
TABULATION OF CASES OF TULAREMIA IN VIRGINIA

(With the assistance of Dr. H. G. Grant, State Epidemiologist, and Dr. Edward Francis, of the United States Public Health Service.)

No.	Year of Occurrence	County of Occurrence	Attending Physician	Agglutination		Result	Remarks
				Titre	Date		
1	1920	Rockbridge	C. H. Davidson.	1.40	1927	Well	
2	1920	Rockbridge	C. H. Davidson	1.20	1927	Well	
3	1920	Augusta	J. E. Womack	1.80	1927	Well	
4	1921	Augusta	J. E. Womack			Well	Clinical diagnosis only
5	1922	Augusta	A. L. Tynes	1.160	1927	Well	
6	1922	Augusta	J. E. Womack	1.80	1925	Well	
7	1923	Cumberland	O. C. Brunk	1.240	1923	Well	First case recognized
8	1924	Chesterfield	T. S. Shelton	Pos.	1924	Well	J. A. M. A., V. XXXIV 1925 p. 1019-20
9	1924	Augusta	J. E. Womack	1.160	?	Well	
10	1925	Lee	Freese	Pos.	1925	Well	U. S. Public Health Reports. Feb. 26, 1926
11	1925	Lee	Lake			Fatal	
12	1925	Lee	and			Fatal	
13	1925	Lee	Francis			Fatal	
14	1925	Rockbridge	C. H. Davidson	1.80	1927	Well	
15	1925	Surry	D. Vanderhoof	1.1280	1926	Well	
16	1926	Henrico	C. I. Sease	1.80	1926	Well	
17	1926	Essex	F. B. Wilson	1.640	1927	Well	
18	1927	Pittsylvania	J. C. Anderson	1.160	1927	Well	
19	1927	Albemarle	D. O. Nichols	1.160	1928	Well	Reported herewith
20	1927	Orange	J. C. Flippin	1.640	1927	Well	Reported herewith
21	1927	Orange	C. E. Riggs	1.10	1927	Fatal	See Case 20, above. Autopsied
22	1927	Orange	Johns Hopkins Hospital	Pos.	1927	Well	See Case 20, above
23	1927	Rockingham	J. E. Wine	1.2560	1927	Well	
24	1927	Rockingham	J. E. Wine	1.640	1927	Well	
25	1927	Madison	L. Taliaferro	1.1280	1927	Fatal	
26	1927	Fauquier	W. C. Payne	1.20	1927	Fatal ?	Data inadequate. ?? diagnosis
27	1927	Elizabeth City	H. G. Longaker	1.160	1928	Well	Va. Medical Monthly, May, 1928
28	1927	Henrico	Va. Epidemiology Dept.	1.320	1927	Well	
29	1927	Charlotte	J. B. Bailey	1.640	1928	Well	
30	1927	Montgomery	G. G. Howery	1.1280	1928	Well	Reported, S. W. Va. Med. Soc. '28
31	1927	Montgomery	G. G. Howery	1.1280	1928	Well	
32	1927	Montgomery	J. G. Davis, Jr.	1.1280	1928	Well	
33	1928	Culpeper	J. R. Boldridge	1.800	1928	Well	
34	1928	Dinwiddie	S. Newman	1.5120	1928	Well	
35	1928	Albemarle	S. D. Blackford	1.160	1928	Well	Reported herewith
36	1928	Pittsylvania	J. C. Anderson	1.5120	1928	Recover'g	
37	1928	Montgomery	G. G. Howery	1.2560	1928	Well	
38	?	Arlington	J. H. Walton	Pos.	?	?	Data incomplete. Agglutination by U. S. Hygienic Laboratory
39	?	Arlington	J. H. Walton	Pos.	?	?	

*From the Department of Internal Medicine and the Clinical Laboratory, University of Virginia Hospital.

Read at the fifty-ninth annual meeting of the Medical Society of Virginia, in Danville, October 16-18, 1928.


MAP OF VIRGINIA
SHOWING
DISTRIBUTION OF CASES
OF
TULAREMIA

fied, have been from rabbits. Case II reported herewith is a possible exception. Practically all of the cases have occurred from handling or dressing rabbits and have been of the ulceroglandular type. The mortality rate in thirty-five cases of known termination is 14 per cent.

TABLE II
TABULATION BY COUNTIES OF CASES OCCURRING IN THE STATE

Augusta	5	Charlotte	1
Lee	4	Chesterfield	1
Montgomery	4	Culpeper	1
Orange	3	Cumberland	1
Rockbridge	3	Dinwiddie	1
Albemarle	2	Elizabeth City	1
Arlington	2	Essex	1
Henrico	2	Fauquier	1
Pittsylvania	2	Madison	1
Rockingham	2	Surry	1

Both the occurrence and recognition of the disease are apparently increasing, as is demonstrated by Table III.

TABLE III
TABULATION OF CASES WITH REGARD TO YEAR OF OCCURRENCE AND YEAR OF RECOGNITION BY AGGLUTINATION

YEAR OF OCCURRENCE	NUMBER OCCURRED	NUMBER RECOGNIZED BY AGGLUTINATION	AGGLUTINATION NOT DONE
1920	3	0	
1921	1	0	
1922	2	0	
1923	1	1	
1924	2	1	
1925	6	2	
1926	2	2	
1927	15	15	
1928	5	11	
?	2		7

The three following cases have occurred in a general hospital within less than a year. They were apparently sporadic.

CASE I

Mr. M. G. F., of Orange, Va., white, aged sixty-three, banker, entered the University of Virginia Hospital on November 27, 1927, under the care of Dr. J. C. Flippin, with an admission diagnosis of "influenza". The onset of the illness dated to ten days before admission at which time the patient developed a severe "cold". He continued to feel badly and five days prior to admission was unable to go to his office. His symptoms consisted of marked malaise and prostration, cough with expectoration, and temperature. He continued to grow worse, became delirious and on the night before admission to the hospital fell, receiving cuts on his head and "brush burns" on his shins.

Upon admission he was disoriented and mildly delirious and his tongue was heavily coated. Chest examination showed scattered patches of fine rales in the back of the lungs, chiefly under the left scapula. Leucocyte count was 11,000. The temperature for the first two or three days in the hospital ranged from 102 to 104 degrees. It was thought at this time that the patient's condition was broncho-pneumonia complicating an influenzal attack. After further examination neither the signs nor symptoms of pneumonia were satisfying and X-ray plates showed no areas of consolidation.

About one week after admission it was noted that the skin abrasions received from the fall before admission had all practically healed except a place on the middle finger of the right hand and on the little finger of the left hand. These abrasions, which were insignificant at the time of admission, became worse, assumed a bluish hue, and seemed to have an effusion under the discolored skin. It was also noted that the right epitrochlear gland was enlarged to about the size of a butterbean and there was a distinct enlargement of the right axillary glands. The left axillary glands were moderately enlarged and the left epitrochlear was about the size of a split pea.

At about this time news came that the patient's brother, who had been rabbit hunting on November 16th, was ill in Washington and suspected of having tularemia. Both brothers and a nephew had dressed rabbits on November 17th. Agglutination tests of B. tularense on December 4th showed a positive reaction in dilution 1:10 and a partially positive reaction in dilution 1:20. On December 10th, agglutination was repeated and was positive in dilutions as high as 1:160. On December 17th, a positive agglutination in dilutions up to 1:640 was obtained. At the time of discharge on January 2nd, the agglutination was positive only up to 1:160. The patient's condition was good at the time of discharge and subsequent reports on his condition have shown a satisfactory recovery.

The patient's brother, whose case has been reported elsewhere, died and an autopsy showed lesions of tularemia. The nephew had a mild infection, the diagnosis of tularemia

being made in the Johns Hopkins Hospital laboratory.

Case II

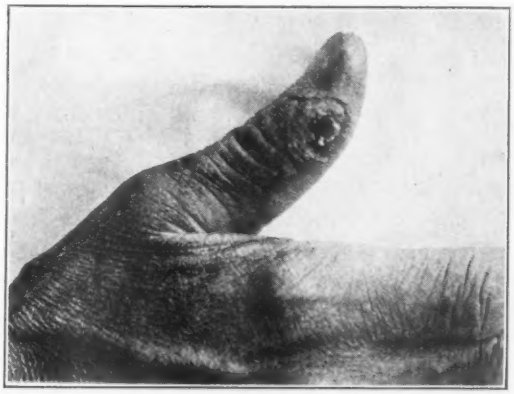
Mr. C. T., aged thirty-four, farmer, of Boyd's Tavern, Va., was admitted to the University of Virginia Hospital on July 25, 1927, complaining of headache.

About ten days prior to admission the patient had begun to feel drowsy and weak, but was not sick enough to go to bed. Six days before admission he developed a severe diarrhoea and the day following a severe headache with moderate polyuria. On admission he appeared sick, but was able to walk. Physical examination was essentially negative and no glandular enlargement was noted. Admission temperature was 104.2. During the patient's six weeks in the hospital he ran a temperature and pulse curve typical of typhoid fever, but did not appear as ill as would have been expected. Fifteen days after admission the patient developed a severe left sided pleurisy which cleared up in a day or so. Repeated Widal tests, blood, stool and urine cultures were negative for typhoid fever. In spite of the negative laboratory findings, however, the patient was discharged on September 7th with a diagnosis of typhoid fever, although such a diagnosis seemed by no means satisfactory.

Five months later (after Case 1 above had been in the hospital), Dr. D. O. Nichols became suspicious that the patient might have had tularemia and he asked the patient to return for further study. At this time the patient, who was in perfect health, showed a positive agglutination reaction for B. tularense with dilutions up to 1:160. The closest questioning, however, failed to reveal any history of the patient's having handled or eaten rabbits prior to his first admission. He remembered, however, having been bitten frequently by ticks. In view of the positive tularemia agglutination and the absence of satisfactory evidence of typhoid infection it seems that a diagnosis of tularemia, perhaps of the typhoidal type, is warranted in this case.

Case III

E. F., colored, aged fifty-four, farmer, entered the Out-Patient Department of the University of Virginia Hospital on June 5th, complaining of weakness of three weeks' duration. The initial history revealed no further complaint than the weakness of sudden onset. On physical examination it was found that the patient had a round open ulcer one centimeter in diameter with soft edges, roughened base with serous exudate, and with slight swelling of surrounding tissues, on the thumb of his right hand. The right epitrochlear gland was easily palpable and there was an enlarged gland in the right axilla about 5 cm. in diameter. The patient said that this sore had occurred about one week previously and that he had noted the enlarged gland at about the same time. However, since neither gave him much trouble he had ignored them. Direct questioning in regard to contact with rabbits failed at first to reveal any evidence of rabbit infection. However, his employer remembered that



E. F.—Tularemia: Primary lesion, Right Thumb.

the patient had told him about five weeks previously that he had skinned a rabbit caught by his dog. The patient had not eaten the rabbit. The initial differential diagnosis lay between tularemic ulcer and the possibility of a chancre. The axillary gland was aspirated and 2 c.c. of rather thin greenish pus was easily obtained. The patient was admitted to the hospital with a diagnosis of tularemia. Admission temperature was normal, leucocytes 5,000. Agglutination reaction was positive in dilutions up to 1:160 with B. tularense. The patient remained in the hospital for one week during which time his highest temperature was 100.6. At the time of his discharge from the hospital, the thumb ulcer was healing nicely but the axillary gland had not decreased in size. The patient was feeling well. One week following his discharge the axillary gland became slightly sore and was incised, a small

amount of odorless yellow pus being evacuated. The gland continued to drain but the tenderness disappeared. The thumb lesion had entirely disappeared within two weeks after discharge. By request, the patient re-entered the hospital on July 6th for a re-examination. At this time a healed scar on the right hand was noted, and the epitrochlear gland had disappeared but the right axillary gland still showed slight suppuration. Agglutination tests showed a positive agglutination up to 1:160 with B. tularense. The patient's general health had continued to improve since the time of discharge.

Summary

1. Sufficient cases of tularemia have been reported throughout the state to make the disease of importance in Virginia. Its recognition and probably also it incidence are increasing in the state.

2. The diagnosis may be suspected from history or physical examination, and all cases of protracted fevers of unknown origin should be tested for tularemia by the agglutination reaction.

Author's Note:—Between the time of writing the above and its publication, three additional cases of tularemia have been recognized at the University of Virginia Hospital. The diagnosis was confirmed in all cases by the agglutination reaction.

Discussion.

Dr. W. A. Brumfield, Farmville: I had the pleasure of visiting a child-health demonstration in Rutherford County, Tenn., not many months ago, and I found more cases of tularemia had been reported in that county than in any other county in the United States and that most of the cases had been picked up in the medical inspection of school children in children who had not gone to physicians and would not have been diagnosed except for this medical public health work. In most of these cases there was no history of exposure to rabbits in any way. I happened to see one little girl about six who walked into the clinic. She was not sick in any way but had a good many glands enlarged. There was a small sore on the back, a kind of ulcer; and the clinician said that clinically it was very much like those cases they had found in the medical inspection of school children. That case I have not heard from since, but the doctor was quite satisfied that it was a case of tularemia. So it is quite probable that this disease is much more common than we have any figures to show, because it is quite likely that many of the minor cases do not go to physicians at all but just go on and have the bumps and get over it after a while and do not consult a doctor.

Dr. G. Foard McGinnes, State Department of Health, Richmond: I want to thank Dr. Blackford for presenting the paper, as I feel that the State Department of Health was somewhat responsible for it. We were very anxious to bring this subject before the medical profession of Virginia, because we feel that tularemia is important in the State of Virginia, and we would like to have the doctors review the subject and familiarize themselves with the diagnosis.

I want to take up my discussion from the laboratory standpoint. There are a number of diseases that may be confused with tularemia. We have a number of unusual diseases coming up in Virginia, such as tularemia, Malta fever, typhus fever, etc. Through the summer the laboratory of the State Department of Health has been running all negative typhoids through the laboratory tests for Malta fever and typhus fever. We have in this way picked up two cases of Malta fever and several cases of typhus fever. We want to cooperate with the physicians of the state in picking up these unusual diseases; therefore, during the fall and winter we are going to run all negative typhoid specimens for tularemia. I want you to feel that the State Department of Health is anxious to cooperate with you in making the diagnosis of these diseases and that we feel they are important. The signs and symptoms in some of the cases are practically the same as in a septicemia and in others practically the same as in typhoid. In all suspicious cases we shall be glad to have you send blood to the laboratory, and we will run the test for you.

THE RATIONAL USE OF DIGITALIS.*

By BLANTON P. SEWARD, M. D., Roanoke, Va.

Digitalis stands pre-eminent among drugs employed in the treatment of heart disease. For a century following its introduction by William Withering, in 1785, little was known about the drug except that it slowed the pulse, promoted diuresis, and, when a sufficient quantity had been taken, caused nausea, vomiting and diarrhea. The empirical use of the drug during that period gave rise to erroneous impressions concerning its action. Within the past fifty years, observations carried out on the effects of digitalis in cardiac disturbances, and recent clinical studies with graphic methods, have given us a more precise knowledge of the drug than we formerly possessed, yet confusion exists concerning its administration.

Drug therapy, one of the measures employed in the treatment of heart failure, is concerned chiefly with the restoration of the heart's efficiency. Digitalis is the most potent drug we have for increasing the effectiveness of the heart muscle. The judicious use of digitalis will usually restore the heart's efficiency and relieve the patient's symptoms, but the effect of the drug does not cease when compensation has been re-established. In many cases its further use is essential for the maintenance of circulatory efficiency and for the prevention of recurrences of failure.

*Read at the fifty-ninth annual meeting of the Medical Society of Virginia, in Danville, October 16-18, 1928.

The results to be derived from the intelligent use of digitalis depend upon a knowledge of its possibilities and limitations. Innumerable investigations upon its pharmacologic action and therapeutic utilization have taught us that the action of the drug is constant, and that the varying results obtained are expressions of differing factors present in various cases. The rate of absorption and elimination of digitalis, the amount required to produce a full therapeutic effect, the potential dangers from its administration, and the underlying cause of the altered cardiac function, which indicates its use, should be borne in mind when prescribing the drug.

Absorption and Elimination

Newer methods of administration have shown that digitalis is absorbed from the gastro-intestinal tract more quickly than was formerly stated; therefore, definite influence may be evidenced on the heart in six to twelve hours, and a patient may be fully digitalized in twenty-four hours.

Whether the persistent effects of digitalis are due to slow elimination or to retention of the drug in the body tissues we do not know, although it is thought that the digitalis substances are gradually destroyed in the body with probably some elimination by the kidneys. Pardee[1] found the average daily rate of disappearance to be the equivalent of twenty-two minims of the tincture regardless of the amount of digitalis in the body, the size of the dose at the time vomiting occurred, the rapidity of administration, the degree of heart failure, the body weight of the patient or the susceptibility of the patient to the drug. While twenty-two minims represented the average rate of disappearance, variations of thirty-eight per cent below to seventy-one per cent above the average were found.

Dosage

In determining the dosage it is not only desirable to know the minimum amount that might be expected to give results, but also to have some idea of how much the patient may take without suffering toxic effects. The average amount of digitalis required to produce therapeutic action after oral administration is determined on the basis of the body weight of the patient and the biological activity of the drug as measured in the cat unit. Two minims per pound may be considered as the average total dose for a high grade tincture. There is, however, a striking variation in the quantity necessary to induce digitalization in different individuals, some requiring fifty per cent more than the average dose, others requiring twenty to thirty per cent less. The variability in dosage, in the rate of absorption and in the time of disappearance in different individuals complicate digitalis medication and demand careful consideration.

The rapidity with which digitalization should be induced depends upon the specific needs of the individual case. One of three general plans of digitalizing may be employed. The extremely ill patient who has not been treated may be given the drug on a basis of one cat unit or .15 c.c. for each pound of body weight.[2] When the required amount of digitalis has been calculated for the patient, one-half of the total amount is administered at the first dose, one-third to one-fourth of the total amount is given six hours later. Thereafter, smaller doses of one-sixth to one-tenth of the calculated requirement may be given every six hours until digitalization is secured. By this method of administration the full effects of the drug are generally obtained in about twenty-four hours. The massive dose method is not practical except in selected hospital cases.

The patient whose symptoms are urgent may be given one-fourth of the total dose, or one dram of the tincture, every six hours for four doses, then about one-half a dram at intervals of four hours during the day until digitalization is complete, which is usually in thirty-six to forty-eight hours. Small doses of twenty to forty minims of the tincture every four hours until the effects are observed meet the requirements of the majority of patients, especially those outside of the hospital. The small dose method will permit a more ready detection of the pharmacologic action of digitalis and the early toxic symptoms it may cause.

Toxic Effects

In recent years many prominent clinicians have taught that insufficient dosage is the most important factor in explaining the poor results obtained from digitalis therapy. This emphasis has prompted an empiric administration of the drug without a realization of its possible toxic action. Beneficial results are

XUM

not usually obtained until digitalis is given to the point of physiological tolerance and there is little margin between the therapeutic and toxic stages. Overdosage results in excessive stimulation of the vagi, an increased irritability of the heart muscle, and disturbances in cardiac rhythm associated with irregularities in impulse formation. While these are the accepted symptoms and signs of digitalis intoxication, toxic action on the heart muscle may occur without nausea or vomiting. Luten[3] and Porter[4] have reported patients with myocardial disease in whom doses well below the calculated basal requirements produced toxic arrhythmia detected only by the electrocardiograph. Digitalis often produces serious injury to the heart muscle and should never be prescribed carelessly.

When considering the indications for the use of digitalis the rapidity of the heart beat should not be the only criterion for its administration. Since it has been so generally believed that the beneficial results of digitalis are due to its power of slowing the heart rate, it has frequently been given in cases of rapidly beating hearts without considering whether or not the rapidity of the beat is a physiological response to temperature, toxins or invasion by organisms. A classification of rapid hearts will be helpful in determining whether beneficial results may be expected from digitalis in tachycardias.

Rapid hearts may be divided into two groups, namely, extracardiac, where the exciting cause is outside the heart, and intracardiac, where the exciting cause is within the heart. Examples of extracardiac rapidity are furnished by febrile and hyperthyroid states. In these conditions metabolism is increased, demanding a greater blood flow through all organs. Stimuli are conveyed to the heart through the sympathetic system and an increased rate results. The slowing effect of digitalis is not obtainable in these conditions because increased stimulation of the sympathetics in response to this abnormal demand is more powerful than any corrective effect obtained from any known drug.

In cases of extracardial rapidity it may be necessary to support or improve the circulation. Acute or long standing infections in the body, or toxemia from hyperthyroid activity may embarrass the heart muscle and render it more easily exhausted. In early myocardial involvement good results may be obtained from suitable doses of digitalis. Toxic manifestations of the drug should be watched for carefully. It is well to remember when giving digitalis in such conditions not to judge the action of the drug by its effects on slowing the pulse, but by the character of the heart sounds and the improvement in the circulation. In acute myocardial involvement of acute febrile diseases the usefulness of digitalis is limited.

The essential feature in the intracardial group of rapid heart action is the excessive activity in the genetic system. The increased rate is associated with a weakened myocardium, which in its effort to supply more blood to other organs beats more rapidly. A continuation of the rapidity leads to exhaustion of the myocardium. In this group digitalis is effective by stimulating the vagus center and diminishing conduction through the auriculoventricular bundle, and by the action of the drug on the heart muscle. Through a combination of these actions the rate of the heart is slowed, diastole is lengthened and the force of contraction is increased.

Indications

As progressive heart failure is always myocardial in origin, digitalis is indicated in all forms of myocardial disease whenever a definite contraindication does not exist. Dyspnea, orthopnea, edema, cyanosis, congestion at bases of lungs, and of the liver, accumulation of fluid in the serous cavities, evidence of cardiac dilatation on examination, alteration in the character of heart sounds, and a departure from the usual blood pressure level, are indications of myocardial insufficiency and hence for the use of digitalis unless partial heart block or bradycardia is present. The effectiveness of digitalis quickly becomes apparent in that the distressed breathing subsides, the heart rate decreases, the character of the sounds improves, urinary excretion increases. The results of digitalization in patients having chronic myocarditis with signs of insufficiency and a normal rhythm are as impressive as those that occur in auricular fibrillation, although the pulse rate in cases with normal rhythm may not show the slowing effects observed in fibrillation.

Digitalis in Ambulatory Patients

The second possibility in the use of digitalis, the prevention of recurrences of heart failure, has received little attention. Frequently patients recover from acute attacks of myocardial insufficiency and are discharged with little or no advice as to the subsequent use of digitalis in the maintenance of compensation. Many patients, especially elderly persons with a moderate degree of myocardial weakness, whether due to hypertension or other cause, may continue for several months to years without showing symptoms of increasing myocardial insufficiency. Ambulatory patients with cardio-vascular-renal disease are frequently seen when there are early symptoms of decompensation, such as shortness of breath on exertion, perhaps some cough, while others may have slight edema about the ankles, or mild digestive disturbances. Examination reveals an increased heart rate, the quality of the first heart sound shows a diminished muscle element, and urinalysis shows low specific gravity. Moderate doses of digitalis often relieve the symptoms promptly. In this type of patient the periodic use of digitalis is especially helpful in strengthening the myocardium, improving the circulation, and preventing attacks of acute heart failure.

The results of Pardee's work on the rate of disappearance of digitalis indicates the approximate efficacy of twenty minims of the tincture daily in maintaining the effects produced by previous larger doses. In treating ambulatory patients many physicians prescribe continual small doses in order to keep below the saturation point. On the other hand, when we realize that the amount of the drug necessary for initial digitalization is greater than that necessary to maintain efficiency when once established, that the effects of digitalis on the heart may last three or four weeks, a more rational procedure would seem to be to administer digitalis only when evidences of myocardial insufficiency appear. The appearance of symptoms, the character of the heart sounds, and the rate should again serve as guides for the size of the dose and the intervals. If compensation is not maintained when the patient is under a restricted body activity previously imposed, the indications may not be for larger doses of digitalis but for decreasing the work of the heart, which may be accomplished by putting the patient to bed.

Conclusion

Before prescribing digitalis it is essential to have a clear conception of its mode of action and the object to be attained from its use. Pharmacologic research has demonstrated that the action of the drug is constant and clinical investigations have shown that the results to be derived from its use depend upon the nature of the cardiac disturbance. A careful examination should always be made to determine the cause of the altered function of the heart, then in properly selected cases, whether ambulatory or bedridden, impressive results will be obtained from its intelligent use.

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Lewis-Gale Hospital.

Discussion.

Dr. Garnett Nelson, Richmond: I do not like to attempt to take Dr. Porter's place, but still I do like to talk about digitalis, so I am very glad to have the opportunity.

We see a good many articles published on digitalis and I suppose that every one in this room uses digitalis and is accustomed to prescribing it. Therefore, a paper attempting to work out some systematic method for using digitalis, a scheme or plan by which you can regulate your dosage and anticipate your results, is always timely. There is one thing with reference to the administration of digitalis that I should like to take up before it gets out of my mind. In the last two years I have never used, except when I have had to use a hypodermic, a liquid form of digitalis. I do not use the tincture nor any of the liquid preparations on the market, digifolin nor digitan nor anything of the kind. The reason for that, of course, is the variation in the size of a drop. You cannot tell a patient to take so many drops or so many minims of digitalis and know what you are doing. We went down in our drug room several years ago, poured out a cubic centimeter of digitalis, and dropped it in various ways, from a medicine dropper to the smallest pipet and from the bottle. The smallest number of drops we got was thirty-two and the largest eighty-one.

With reference to the method of medication, of course if you are in a hurry you have to go ahead and give large doses of digitalis. The effect of a dose of digitalis lasts about eight days. If you

have in mind what you need for digitalization, you can go ahead and scatter it out over several days. If you bear in mind that the heart once digitalized is more sensitive to digitalis, you will have to cut your dose down.

Then bear in mind that digitalis is a very active drug and you know what to expect, know what the average results will be. In regard to the contraindications to digitalis, the only one I know is partial heart block. In complete heart block it will do no harm but do no good. In partial heart block it may cause a complete block. In paroxysmal tachycardia it will do no harm but may do no good. Someone asked me if hypertension is a contraindication to digitalis. By no means. If you have a rapid heart action, arrhythmia, and decompensation, digitalis is just as much indicated in hypertension as when you have low pressure—or not as much, perhaps, but it is indicated. If you slow the pulse down, regulate the heart, and standardize the pressure, the pressure may fall instead of maintaining the high altitude it had.

STUDIES AND REPORT OF FIVE HUNDRED EPITHELIOMAS.*

By C. AUGUSTUS SIMPSON, M. D.,
and
H. FORD ANDERSON, M. D.,
Washington, D. C.

From the Dermatological Department of George Washington Medical School.

In presenting this report, which may seem a rehashing of an old subject, we are endeavoring not only to give our results, but to make certain deductions which may lower the percentage of failures in curing relatively benign and malignant epitheliomas.

In no other type of malignancy is the physican given the unhampered opportunity for cures and, while our results are striking and high, if we become too stereotyped in our methods of treatment we can continue to expect occasional failure.

To become over-enthusiastic and to employ radium, the X-ray or electro-coagulation, one to the exclusion of the other, in a lesion such as an epithelioma, which may vary in type and be totally different in its response according to its location, seems therapeutic empiricism.

So many splendid reports and statistics have preceded this paper, dealing with percentages of cures, types of lesions, location and so on, that it seems opportune to utilize these statistics in a broader survey of the subject.

While many of these reports are given after a reasonable time following the last treatment, there are some which are of rather short interval, which have no doubt left us open to criticism by physicians especially interested in malignant conditions. For instance, statistics may show that recurrences take place most frequently in the first year after treatment; yet such a short time will not impress those whose work deals largely with malignant growths. Also, the percentages of cures of epitheliomas of the ear with both radium and the X-ray are clearly inaccurate and must in the light of more experience be revised.

The varying sensitiveness of the different types and especially the different locations of epitheliomas offers such a wide variation in response to treatment that a measure of selective therapy not emphasized in the past seems to be called for. For instance, the deeply indurated, ulcerated lesion, especially when occurring on the side of the neck in the region

Fig. 1.—Basal cell epithelioma of ear extending to, but not invading, the cartilage.

of the ear, constitutes a very dangerous tumor no matter what its size may be. Such a tumor will resist more radiation than a similar lesion on the cheek. One reason is that the tumor of the neck is most often a prickle cell growth while the average cheek lesion is a basal cell tumor.

We have never been able more than to guess at the difference in types, but experience has led us not to rely on either radium or the X-ray in treating such a tumor but to destroy it thoroughly by electro-coagulation, and then to employ irradiation. So long as it is impossible clinically to differentiate a prickle cell from a basal cell epithelioma, it behooves us to regard many other growths besides the neck lesion as capable of metastasizing by destroying them thoroughly with the cautery and not trusting to radium and the X-ray.

*Read before the Section on Dermatology of the American Medical Association, at Minneapolis, Minn., May, 1928.

We are satisfied that we have not been as radical in the destruction of epitheliomas as we should be, perhaps having in mind the cosmetic result or else trusting too much to radium and the X-ray.

In malignant growths of the lower lip in men and of the extremities we have by sad experience come to know that both radium and the X-ray exclusively are often inadequate. Many brilliant results with both should not blind us to the fact that here they should be considered only as auxiliary measures.

Fig. 2.—Prickle cell epithelioma of the ear showing typical pearls and whorls.

The same holds true possibly to a less extent in epithelioma of the ear, or any other location, such as the upper forehead, where a scarcity of subcutaneous tissue separates the epidermis from the underlying bone and cartilage.

This cushion of fibrous tissue, muscle and blood supply seems so necessary in securing a result with either radium or the X-ray as to warrant a change to other forms of therapy when it is absent.

In eyelid lesions, according to our experience, radium has an advantage over any other form of therapy, even X-ray. In a series of cases which failed to yield to X-ray treatment used by ourselves and others in varying filtrations and quantities, we secured uniformly good results with the radium plaque. Since employing the stronger plaques, we have not had a single failure, as our statistics will show. Such a clinical difference in the response to radium and the X-ray is commonly seen in the treatment of angiomas and lupus erythematosis. It is known that radium produces a more specific selective effect on tumor cells than the X-ray, which gives more reaction in connective tissue.

It may be well to mention here that the patient should be warned of the possibility of a permanent alopecia of the eyelashes before treatment is begun. Since Washington has become the playground of the shyster, we have had one experience of this kind which has taught us a lesson.

Contrary to our results in eyelid epitheliomas is our experience with malignant growths of the ear and cartilage of the nose. With both X-ray and radium in varying doses and filtrations, we have not succeeded in curing a single patient.

Fig. 3.—End result of treatment of an extensive prickle cell epithelioma of the ear.

We feel that additional warnings should be given the profession regarding the resistance of these tumors and that real harm and a disastrous loss of time occurs if one relies on radium and X-ray for a cure.

Time and again we have seen reasonably quick healing of epitheliomatous ulcers of the ears which, if watched long enough, will break down and continue to progress. We have seen this so often that we cannot help but feel that some of the cases of reported cures have not been followed long enough.

The one and two year follow-up statistics are certainly inadequate in ear lesions. Actual

Fig. 4.—Typical epithelioma of the eyelid.

cautery or, better, electro-coagulation, going well beyond the borders of the growth, or wide surgical excision of the tumor, are the best methods for treating epitheliomas of the cartilage.

The true biologic action of radium and the X-ray is still unfathomed but we do know that results are largely dependent on two factors: (1) interference with the blood and lymph supply of the tumors, and (2) direct injury to the tumor cells and at the same time an irritation to the surrounding tissues which produces a reactive reparative inflammation in favorable cases leading to the formation of a cell mantle around the tumor.

As to the stage in cell life when it is most radio-sensitive, it seems probable that we will have to amend the old law of Bergonié regarding mitosis. Strangeways was able to show that radiation had no effect on cells undergoing mitosis any more than on cells which have already acquired their adult morphologic or physiologic characters. It is in the premitotic stage that the cell is most sensitive to radium and X-ray therapy, when its earliest effect is a temporary inhibition of cell division.

In an effort to ascertain the resistance of epitheliomas of the ear, we carefully studied histologic sections from eighty-five different cases collected from Johns Hopkins Hospital and our own clinics. We found that in no instance was the cartilage actually invaded, although this is not entirely an infallible rule. Therefore, actual cartilage involvement could not explain this resistance.

We went further in our studies of tissue resistance, employing varying exposures of radium to the ear and normal skin of rabbits.

The normal skin sections at the end of fourteen days showed the well known changes reported by all observers, while the reaction on the ears over the cartilage seemed to us unusually superficial. This superficial reaction seen in the animal was constant and gradually

Results of Treatment of Malignant Growths

Location	Number of Cases	Percentage of Total	Per Cent Cured	Treatment Failed: Radium No.	Radium %	X-Ray No.	X-Ray %	Combined* or Desiccation No.	Combined* or Desiccation %	Combined after X-Ray or Radium Failed No.	Combined after X-Ray or Radium Failed %	No. of Recurrences	No. with Insufficient Treatment	Failures No.	Failures %	No. of Deaths	Previous Treatment: X-Ray or Radium No.	X-Ray or Radium %	Surgery No.	Surgery %
Cheeks, including chin	155	31.0	96.8	49	31.6	65	42.0	41	26.0	..	....	1	4	5	3.2	..	..	....	..	....
Nose	115	23.0	96.6	23	20.0	48	41.3	44	38.4	..	....	..	4	4	3.4	..	..	....	..	....
Eyelid	73	14.6	100.0	44	61.6	6	8.2	23	30.2	..	....	..	..	..	....	..	..	....	..	....
Lower lip	24	4.8	91.7	5	20.8	3	12.5	16	66.6	2	8.3	..	1	2	8.3	2	..	....	..	....
Upper lip	7	1+	100.0	3	43.0	2	28.6	2	28.6	1	14.3	..	..	..	....	..	..	....	..	....
Neck, back of ears	24	4.8	87.5	7	29.1	5	20.0	12	50.0	6	25.0	2	1	3	12.5	1	..	....	..	....
Ears	15	3.0	86.7	2	13.3	2	13.3	9	60.0	3	33.3	1	1	2	13.3	..	..	....	..	....
Temporal	16	3.2	93.75	4	25.0	9	56.2	3	18.8	..	....	..	1	1	6.25	..	..	....	..	....
Forehead	33	6.6	90.1	14	42.4	10	30.3	9	27.3	5	15.1	..	3	3	9.9	..	..	....	..	....
Trunk	15	3.0	100.0	3	20.0	10	66.6	2	13.3	..	....	..	..	..	....	..	..	....	..	....
Neck	9	1.8	100.0	2	13.3	6	40.0	..	46.6	..	....	..	..	..	....	..	..	....	..	....
Extremities	24	4.8	83.3	3	12.5	4	17.7	17	70.8	2	8.3	3	1	4	16.6	3†	..	....	..	....
Total	..	...	95.2	..	....	..	....	..	....	..	....	..	..	24	4.8	..	46	9.2	41	8.25

* Combined treatment included X-Ray or radium, plus desiccation or electrocoagulation.
† Arms amputated.

exaggerated with increasing dosage of radium. It is possible that it has some significance when considered with the fact that in this location there is a scanty amount of the well nourished subcutnaeous tissue on which the good results of X-ray and radium treatment so largely depend.

Fig. 5.—End result in case shown in Fig. 4.

Conclusions

1. Radium therapy, because of its convenience, as well as other valuable characteristics, is apparently the method of choice in the treatment of epitheliomas of the eyelid.

2. In ordinary epitheliomas of the cheek and nose, the use of radium or the X-ray constitutes an ideal treatment, excision or electrocoagulation or desiccation seldom being required.

3. Epitheliomas of the lower lip in men, on the extremities and below the ear on the neck are treated by X-ray or radium.

4. Epithelioma of the ear of any extent requires surgical excision or complete electrocoagulation, both radium and X-ray in themselves being entirely inadequate.

5. We believe that the percentage of failures can be materially decreased by a proper selection of the methods of coagulation, radium, X-ray or excision, depending on the clinical type of the lesion and, above all, on its geographic location.

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Abstract of Discussion.

Dr. Joseph J. Eller, New York: The dermatologist has been more fortunate than the other medical specialists in the treatment of malignant conditions. This is because the lesions are accessible, and also because there is often an opportunity to see the lesions early. The treatment for superficial malignant conditions is not new. Dr. Pusey, twenty-five years ago, demonstrated cures of epitheliomas of the eyelids by means of the roentgen-ray and various other men also showed successful cures almost as far back as that. I do not think that we have improved our technic much in the last fifteen years in the treatment of these lesions. The newer methods of electrocoagulation, electrodesiccation and the high frequency knife are not greatly superior to the old cautery of several years ago. They are all destruction by heat I was glad to hear the authors emphasize that it is dangerous to be a faddist in medicine. A man may become expert in electrodesiccation or radium therapy or roentgen-ray irradiation, and want to treat all cases by these means. That is a mistake, for we must individualize in all cases. It may be advantageous to combine all these methods. For instance, one might find it of great advantage to use first the endotherm knife, later a radium plaque application, and then roentgenotherapy for the adjacent glands. That is usually good treatment in all epitheliomas of the mouth and lips. It is well to use roentgen-ray irradiation in the glands of the neck, whether they are palpable or not, and in epitheliomas of the tongue, lips or mouth. Another point is that it is surprising to find how much tissue can be cut away from the lower lip and still leave a good cosmetic effect. I also wish to stress the author's comment that it is easier to destroy growths on the ear lobes by electrocoagulation than by means of radium or the roentgen-ray. I do not know why, unless it is because, as they said, the blood supply may not be so good in the areas over the cartilage as in other areas.

Dr. Laurence R. Taussig, San Francisco: I am convinced that in most instances we can differentiate between basal and squamous cell growths, and that it is well to do so, owing to the differences in the treatment indicated and used. It is interesting that every now and then we see growths which clinically seem to be basal cell but which later prove to be squamous. This does not alter our responsibility of trying to differentiate between the two types. In making the differentiation I think the duration is of great importance. I feel that radiotherapy alone should be restricted to basal cell epitheliomas, and then only when the cosmetic result is of importance, particularly in the lesions on the eyelid. For the usual basal cell growth I feel that the curet, followed by irradiation, is the method of choice. For the squamous cell growth, I prefer to curet, desiccate or use the actual cautery before irradiating.

Dr. Hamilton Montgomery, Rochester, Minn.: In

regard to the failure of cases that do not respond to radium and roentgenotherapy, I wish to urge that a biopsy be made. I believe that on microscopic study most of these cases will be found to be either transitional epitheliomas showing both squamous and basal cell features or frank squamous cell epitheliomas. The transitional, i. e., the basal-squamous cell epitheliomas, are especially resistant to both the roentgen-ray and radium.

Dr. George M. MacKee, New York: On several occasions I have searched the literature on cutaneous X-ray therapy only to find that I had collected impressions mostly with very few proved facts and almost no statistics. About ten years ago I compiled my epithelioma statistics. In unselected cases of basal cell epithelioma treated with the X-ray there were 85 per cent permanent cures based on a five year period of observation. I could never obtain more than about 95 per cent cures in selected cases. Some lesions, even when small and superficial, cannot be permanently cured, or even clinically cured with the X-ray or radium. The explanation may be that about 12 or 15 per cent of basal cell epitheliomas are of an undifferentiated type; that is, they contain peratinized cells, or prickle cells, or are derived from the layer just above the basal cell layer—cubocellular epithelioma. A hasty microscopic examination of such lesions leads to a diagnosis of pure basal cell epithelioma. If I were to compile statistics again, it would not be surprising if the percentage of cures was a little lower; that is, in the lesions treated with the X-ray or radium alone. In those days I employed larger doses than at present, especially in comparatively young patients, because it is preferable not to leave the so-called X-ray skin. It is my opinion, and this emphasizes a statement just made by Dr. Eller, that the dermatologist should be expert in the use of several methods of treatment, such as the X-ray, radium, surgical diathermy and surgical excision, and the modality best suited to the individual case should be selected. There is probably no better method than the X-ray in selected cases, but if the lesion does not respond to a dose that is safe and sane it is much better to resort to some other method or a combination of methods, rather than to insist on curing a lesion with the X-ray that is exceptionally recalcitrant to this agent.

Dr. Arthur J. Markley, Denver: There is no doubt that many of the failures experienced in the treatment of malignant conditions of the skin have been due to inadequate radium dosage. Plaques containing from 5 to 10 mg. of radium with very little or no screening are very widely used in the treatment of basal cell epitheliomas; many are cured by this technic, but it is certain that many others progress deeply in the skin even though superficial healing occurs, and, as Douglas Quick recently observed, such failures have been an important factor in bringing about the wide use of the various forms of heat therapy, endothermy in particular, as they are certainly more effective than radium in inadequate dosage. If basal cell epitheliomas, 1 cm. or more in diameter, are given a minimum radium dosage of from 400 to 500 milligram hours, screened by 2 mm. of lead at a distance of 1 cm. from the lesion, they should be eradicated; the resulting scars, even in the more superficial types, will be more satisfactory, and deep recurrences and extensions will be largely prevented. This is most conveniently done with 50 mg. of radium, but the amount may, of course, be varied, and the time increased or decreased. In the prickle cell type, even larger dosage is required and should always include treatment of the anatomically related lymph glands. Radium plaques have a definite place in dermatologic therapy but without undue expenditure of time they do not furnish sufficient radiation for the treatment of any but the most superficial malignant growths.

Dr. William Allen Pusey, Chicago: I am always interested in papers on the treatment of epithelioma and am always impressed with the fact that many of the distinctions we make are distinctions of personal equation, and not essential differences. I agree that many of the things that have been said this morning are correct, but I do not agree with many of the differences of opinion about refinements. In treating any epithelioma, the problem is essentially not the agent one uses but the use of the agent that will completely destroy the growth. I have often thought that, if forced by necessity, one could take the head of an old flint arrow and a little caustic lye and treat an epithelioma successfully with that. I have no particular interest in the various modified devices that the individual prefers. This is illustrated in the matter of the quantity of radium we use. The statement that a plaque of 5 mg. in 1 cm. of square area, or 10 mg., is not adequate for the treatment of a superficial epithelioma is disproved by my long experience. I have been fortunate for some time in having more than 50 mg. of radium, but I use the plaque successfully all the time.

Dr. H. Ford Anderson, Washington, D. C.: I am rather inclined to agree with Dr. Pusey about the use of the radium plaque. We have obtained very good results in the eyelid growths, 100 per cent being cured by the use of the triple strength radium plaque, filtered through 0.1 mm. of aluminum, in the usual case. I agree that in most cases we can tell whether they are basal or prickle cell growths, although we do not have sections of the cases to show and we did not divide them into the basal cell and squamous cell varieties. We try to get a section of all the cases of recurrence and of the resistant lesions.

FIRST AID TO THE INJURED EYE.

By CLARENCE PORTER JONES, M. D., F. A. C. S.,
Newport News, Va.

Those of us who practice ophthalmology see many an eye either partly or totally blind, which could have been saved had there been a simple first aid given by the family physician.

The increase of farm machinery as well as machine made goods in the shops has increased eye hazards year by year. One-twelfth of all injuries are to the eye, according to Stanford, and one-tenth of all blind persons lose their sight by accident. Much of this latter can be prevented, and it is not far short of criminal when any of us fail in our duty.

Every physician who is practicing in a locality which is out of touch with an oculist should carry in his satchel the following items: 1 drachm of butyn 2 per cent, or cocain 4 per cent, a small bottle of mercurochrome, or tinc-

ture of iodine; a drachm of 1 per cent atropine, or a tube of atropine eyesalve 1 per cent; a few clean wooden toothpicks; a bit of cotton, gauze, adhesive and roller bandages, and a corneal spud.

There are circumstances often which make it well nigh impossible for a sufferer from an injured eye to consult an oculist. Then the family doctor should arise to the emergency of the occasion.

Injuries to the conjunctiva, if confined to this structure can be treated with zinc sulphate drops, one grain to the ounce, or irrigation with boric acid solution or bichloride of mercury 1 to 8,000.

Penetrating wounds of the eyeball require at all events prompt care by an oculist who has hospital facilities. The first aid requires gentle irrigation of the conjunctival sac to remove any debris, clotted blood, etc., and the putting on a sterile dressing.

Burns are best treated by instilling castor, or sweet oil, and atropine drops. Of late, however, picric acid in combination with a local anesthetic, in the form of an ointment, is recommended.

Wounds of the eyelids should be carefully stitched, with due regard to as near complete approximation as possible, using 00 catgut, or dermal suture material.

About 95 per cent of all the dangerous wounds to the eye are abrasions of the corneal surface, nearly always from a foreign body embedded thereon. Here is where first aid properly given is perhaps the greatest stroke in preventive medicine, from an economic standpoint. Every injury to the surface of the cornea should be assumed to be infected, and treated accordingly.

Just as soon after an injury to the cornea as is possible (the sooner the better), a few drops of butyn, or cocain, the former being preferable, are instilled. Immerse the blade of a corneal spud in the alcohol bottle, instill more anaesthetic in the eye; ten minutes from the beginning, take the spud and gently lift away the foreign body, being careful to injure as little of the corneal substance as possible. Wrap a few shreds of cotton around the end of a toothpick, dip in mercurochrome or iodine and touch the abraded surface. If the abraded surface is as much as a square millimeter instill a drop of 1 per cent atropine, or some atropine eyesalve, except in persons over fifty years of age. And unless the patient can stay indoors, put on a dressing and let it remain for twelve hours. Then, if there is any pain or discloration about the site, the case should be treated as an ulcer of the cornea.

The first aid to an ulcer requires perhaps more judgment than in the treatment of any other disease about the head. Whether the actual cautery, the curette, the application of heat or cold, there is one thing the general practitioner can do in those cases for whom an oculist cannot be obtained, and that is to put the patient in bed, anaesthetize the eye with butyn or cocaine, touch the ulcer with 5 per cent mercurochrome, and if under fifty years of age, instill atropine every three hours and apply butyn ointment 1 per cent as needed for pain. In this way many an eye will be saved which would otherwise be lost.

Electric welder flashes (electric ophthalmia) are not true injuries, but a "nerve shock" to the parts which are treated by butyn, 1 per cent ointment, and a dressing applied for twenty-four hours.

The cornea is a non-vascular structure, nourished by lymph osmosis from the lymph spaces in the conjunctiva and sclera, which lie in juxtaposition to its own. Thus we see it is feebly resistant to infection.

Destruction of the corneal substance is the essential feature of all forms of suppurative keratitis, leaving an opaque cicatrix at best on healing, or by perforation involving the whole eyeball, resulting in phthisis bulbi, and total loss of vision. The prevention of such a calamity is the sole purpose of these few scattering remarks.

Cocain, atropine and other alkaloids, develop a ferment after some ten or fifteen days in solution or in the form of salve, unless they are made up in combination with an antiseptic. We find that to each ounce of solution or ointment, bichloride of mercury one-sixth of a grain, sodium chloride one grain, will delay fermentation or other deterioration practically indefinitely. In case of the ointment, the druggist should rub the salt, atropine, cocain, or mercury up first in a few drops of thin mineral oil, before adding to the vaseline.

In conclusion let me beg you to remember that:

First, the prevention of infection in wounds of the eye is our most imperative duty.

XUM

Second, all abrasions of the cornea, however slight, should be assumed to be infected and treated antiseptically, using mercurochrome or iodine, and perhaps atropine and a sterile dressing.

Third, corneal ulcers should be referred to an oculist as promptly as possible, on account of the danger of destruction of the eyesight.

Fourth, if there is any reason why this is impossible, it is the urgent duty of the physcian to treat the same himself vigorously.

3117 *West Avenue.*

RECTAL ANESTHESIA IN THYROID SURGERY.*

By H. H. TROUT, M. D., Roanoke, Va.

I will refrain from giving a historical review of the origin, the progress and the various modifications of rectal anesthesia, except simply to mention that the greatest credit is due to Dr. James Gwathmey, of New York, for making this procedure as popular as it is today.

It is not necessary to more than mention to this, or to any other medical gathering, the name of Crile without every mind instinctively recalling his wonderful, and revolutionary work in the fields of "psychic shock" and "anoci association". During any visit to his Cleveland Clinic, one is very favorably impressed with the wonderful "team work" and attention to every detail which is required to carry out successfully all the necessary procedures incident to anoci-association. The average surgeon naturally, after witnessing such a remarkable demonstration of attention to details, as is required by so many trained associates—from interns down to orderlies—asks himself if he can apply this method to his thyroid cases in the hospital in which he works. There are very few surgeons in the world who have sufficient thyroid work to properly train so many different people, so that the method of Crile can be carried out "without any hitch", and one mistake spells failure. The vast majority of the teachings of Crile can be carried out in the average well organized hospital, but operating at a time when the patient does not realize the operation is to be, has proven the most serious obstacle to the carrying out of Crile's suggestions, and only very few surgeons have been able to master the subject.

*Read before the Southwestern Virginia Medical Society, at Wytheville, Va., September 27-28, 1928.

It is in this "part of the campaign" against the fear of the operation that we, along with many large hospitals, find rectal anesthesia of considerable aid, for with its use one can operate without the patient even suspecting the hour or the day of the operation. Naturally we have done our share of thyroidectomies under local anesthesia, both with and without the addition of nitrous oxide or ethylene with oxygen and ether, but we now feel that rectal anesthesia gives us an additional margin of safety, and certainly permits the operation to be done with much more comfort to the surgeon and less dread, and therefore less "psychic shock", to the patient. Of course, if one desires to carry out to the fullest extent Crile's anoci-association, block and regional anesthesia can be employed. Many surgeons feel the healing of incisions is not as satisfactory with as without infiltration anesthesia. Personally, I have not seen enough difference to form other than a conjectural opinion.

As yet, there have been reported no bad results from using ether in the rectum in thyroid cases which could in any way be ascribed to some peculiar toxicity existing between this anesthetic and hyperthyroidism.

The method of giving rectal anesthesia is not as simple as some enthusiasts would have us believe, for here, too, as in every other procedure employed to deceive the patient and allay her fears, attention to minute details and a well organized hospital staff is required if the method is to be fully successful.

When the patient, after the usual pre-operative preparation by the employment of basal metabolism studies, Lugol's solution, rest, mental therapy, etc., has reached the best possible condition, the start of various steps in the method of giving rectal anesthesia begins.

If the operation is scheduled for nine A. M. on the day selected by the surgeon, the following routine is employed and started three or four days before the appointed date. Every morning about seven A. M., the patient is given an S. S. enema. At eight A. M., a hypodermic of morphia, grains 1/8, with atropine grains 1/120, is given, and, if the patient is not asleep by eight-thirty, the morphia is repeated. Also, at eight A. M., 300 c.c. of olive oil with just enough ether to allow the patient to smell it (usually one drachm) but not enough to have any anesthetic effect is injected into the rectum.

After three or four days of this, depending somewhat on the patient's reactions, and the allaying of her fears, 150 c.c. of ether with 120 c.c. of olive oil is substituted for the routine olive oil. Gwathmey recommends 30 c.c. of ether to every twenty pounds of the patient's weight, but, with us, we have found the patient is not as apt to expel the solution if given in smaller quantities. Another aid in preventing the expulsion of the solution is to be sure it is given slowly. Recently we have tried a syringe with a bulb near the tip which is put in the rectum and then pulled back so as to block the escape of the fluid. As yet we have not had sufficient experience with its use to justify an opinion.

It has been our experience that by nine A. M. following this routine, the patient can be brought to the operating room, the operation performed leisurely and without alarming the patient. In fact, in a considerable number of our cases, the pulse rate has been reduced when compared with the usual rate. In not one single instance has the patient realized the operation was to occur on the date it actually took place.

To illustrate the necessity of attention to every detail, I recall one experience told us by one of our patients She said she was suspicious that the operation was going to be on that particular day because of the failure of the nurse to put her flowers back in her room early in the morning.

In another instance, suspicion was aroused by the nurse removing the water pitcher from her bedside table at the middle of the night and not returning it at the usual hour in the morning. Of course, these defects were easily remedied.

Apparently the mental relief the patient obtains from the realization the operation has been done without their knowledge far offsets the shock experienced on finding out the ordeal is finished.

Post-operative nausea is almost entirely eliminated, which is very likely largely due to the small amount of ether employed. The relaxation we obtain in these patients is not sufficient to even consider a laparotomy. Certainly the nausea and toxicity is nothing like as great as one would obtain by giving sufficient morphia to numb the sensation of patients to the extent that they would not know they were on their way to, or in the operating room.

It is very interesting and instructive to talk to these patients a few days after operation, and the one point which seems to be present, without suggestion from anyone, and also without a single exception, is the excessive gratitude these patients express that they have been spared the dread of realizing they were on their way to the operating room, as well as spared the trials of an operation done under local anesthesia, even if performed without pain.

There is a certain dread or fear, with some consequent "psychic shock", due only to the realization by the patient that she is in the operating room. The method will probably never be very popular with busy surgeons for the length of time it takes for the patient to be completely under the effects of the ether varies considerably, and, for that reason, it is best to list only one thyroid case for that day. However, one active surgical friend of mine puts on his most toxic case with rectal anesthesia first in his day's work, and with the remaining cases he uses a combination of local and ethylene. It is interesting to note this surgeon is enthusiastic concerning rectal ether, and is trying to arrange his methods so that one case after another can be done without confusion. He finds not only does he have to consider the varying time of the anesthetic to take effect, but also his inability to accurately gauge the length of time required in different thyroidectomies.

The removal of all apparatus, such as masks, shields, etc., from the face, gives an easier and larger operative field. Sometimes the patient is not completely relaxed, and then usually all that is necessary to produce deeper anesthesia is to place a wet towel over the mouth and, thereby, make the patient rebreathe the ether.

At the completion of the operation, a rectal tube is passed and the remaining ether-olive oil solution readily escapes. We usually then wash out the rectum with normal saline. When rectal ether was first used, there were some reports of irritation of the bowel and several rather extensive sloughs of the mucosa, but, in recent years, this distinct disadvantage has apparently ceased to exist, and this is due to the better proportions of the mixture, etc.

A few years ago we tried giving magnesium sulphate hypodermatically for the synergistic

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effect, as also advocated by Gwathmey, but we had two small, but most unpleasant, sloughs at the sites of the injections and, therefore, abandoned this practice.

Of course, we do not believe the fact that we have had no deaths in our thyroidectomies for hyperthyroidism, since we have been employing this method, is entirely due to the use of rectal anesthesia. Any death rate can be largely controlled by the selection of cases, in addition to the generally accepted pre- and post-operative care, but such "selection" in the hands of some surgeons sometimes leaves a small percentage of cases to die at home. These cases might be saved by adding rectal anesthesia to the routine of a well-equipped hospital. We do feel, however, this method has been a contributing factor to what success we have had, and we do know this procedure has proven of much comfort, and we believe some safety, to our patients, as well as added to the ease of the surgeon in doing what is sometimes a difficult operation.

RHEUMATIC HEART DISEASE.*

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The past few years have seen a tremendous awakening of the medical profession and the laity in the subject of heart disease. The American Heart Association, through its publications, has opened our eyes to the vast number of cases and to the appalling economic loss attendant thereto. The prevention of this loss to the country is receiving the attention it rightfully deserves along with tuberculosis and cancer. And just as in the latter two diseases, only by recognizing the disease in its incipiency and by investigations into its causes can it be prevented. While the economic loss is not usually recognized until adult life, it is in childhood that the majority of the cases of chronic valvular diseases have their beginning. The death rate in New York City over a period of six years shows three times as many deaths from heart disease in children of school age as from tuberculosis. In older children the curve of cardiac deaths is steadily mounting. This increasing death rate in the young does not give any idea of the enormous number of young adults incapacitated for work who become an economic liability to the community.

*Read before the Medical Society of the District of Columbia, October 31, 1928.

Heart disease in this paper refers to endocarditis, myocarditis and pericarditis, since the causation in each is apparently the same. When heart disease is discovered in the young, one's thought is immediately focused on rheumatic fever as the causative factor. Perhaps there is no clear history of such an infection obtainable; and, while chorea is a frequent antecedent, it is not always possible to obtain a history of such an occurrence. Rheumatic fever and its allied symptoms are both varied in their manifestations and severity. Frequently growing pains, muscle pains, complaints of being tired, slight muscular twitchings go unnoticed by the parent and are never associated with so grave a condition as the later manifest heart murmur. On the other hand, the physician is apt to blame every murmur on an antecedent rheumatic attack whether he can obtain a history of such or not. Such diseases as scarlet fever, measles and pertussis have been blamed for a later valvular lesion, though no convincing evidence has thus far been brought forward to substantiate this And while it is never amiss to temporarily look upon all heart murmurs in young people as serious, or potentially so, there are many children who have been compelled by their physician to lead a restricted life for months or years when in reality the murmur or an irregularity was of no consequence. This is particularly true where a soft apical murmur has been the result of a low grade anemia, or an irregularity was nothing more than what Mackenzie said "is a sign of healthy heart muscles". Marshall saw this latter condition in only two of 119 cases of heart disease reported in the *Archives of Diseases of Childhood.*

Many causes have been assigned to rheumatic fever and its associated heart disease and chorea. An hereditary tendency or weakness, climatic conditions, diet, and a specific organism are perhaps the more important ones. There is no denying the fact that a good many families have a history of rheumatism in one form or another and many are known to have even the more serious heart complications. I have personal knowledge of one such family in which the mother is a chronic sufferer from rheumatic heart disease whose child died of the disease, and in another family two girls had rheumatic fever and heart disease, one dying, while the other is still a sufferer. There

are numerous other families, however, in which the disease has no known antecedent history. Climate, no doubt, has its proper place as an accessory cause, as it is conclusive that in the north temperate zone cases are more common, especially where humidity is excessive. The economic status of the family also plays a part. The well-to-do escape infection in many instances, no doubt, because of the closer attention to minor ailments, which, if neglected, would cause a lowering of resistance to the infection. Notably, Small, Rosenow, and Birkhaug have each reported in the past few years an organism which they claim to be specific for rheumatism and its allies. These organisms have invariably been cultured from the tonsils and rarely from the blood stream. Each has made a serum for the treatment of the acute illness and a vaccine for chronic cases. These organisms have all been allied to the streptococcus group. Poynton and Payne, in England, isolated a diplococcus as the causative agent as early as 1900. Further study is necessary, however, before a definite conclusion can be reached as to the specific causative bacterium or the efficacy of serum.

The onset of rheumatic fever in the child is a very insidious one as a rule. Malaise, complaints of discomfort in the extremities (so-called "growing pains"), temperature, feeling tired, rapid heart action or the like may be the first thing noticed These symptoms are apt to be overlooked and only when the patient limps, shows dyspnea on exertion or begins to run a noticeable temperature, does the parent take note. A gradual onset of these symptoms with anorexia and anemia proves the condition to be more grave than first thought. I have only a few days ago seen a child of six in the dispensary at Children's Hospital whose complaints of nervousness, occasionally dropping articles, coming in from play feeling tired, feeling discomfort in the arms and legs, typifies the insidious onset which so frequently results in a serious attack of rheumatism and carditis. The onset may, however, be sudden, with fever of 101 to 103, acute pains in one or more joints, vomiting, pain in the abdomen, sore throat with red and swollen tonsils, rapid heart action with or without a murmur or symptoms of chorea. Even cardiac symptoms and signs may usher in an acute attack. Severe pain and the profuse sweats of adults are not common symptoms in the child; rather do we see more prostration and toxemia and earlier symptoms of cardiac involvement. The leucocyte count is never excessive, ranging from 8 to 12 or 15,000, with polymorphonuclears relatively increased; according to Swift persisting for a relatively long time. This persistence of a leucocytosis of moderate degree is frequently the only indication of an existing focus of infection later on in the subacute or chronic phase.

With the disease having been established and the acute symptoms of rheumatism having subsided, certain symptoms specifically related to cardiac involvement may manifest themselves. Temperature which persists above 100 degrees for several days should always be regarded seriously. Scanty, high colored urine is present. Dyspnea in varying degrees of severity is found usually associated with cough and cyanosis of a lesser or greater degree. Pain in the region of the heart is a frequent symptom and varies greatly in its severity and character from the sharp stitchy pain similar to pleurisy to that of a sense of constriction about the lower neck. Palpitation may occur and is necessarily a sign of definite injury, as are epistaxis, cyanosis of the face, pain and tenderness over the liver, and edema about the ankles or other dependent parts. These latter symptoms may generally be regarded as signs of myocardial degeneration rather than a valvular lesion. The electrocardiogram shows some functional disturbance in practically 90 per cent of cases of early or moderate carditis.

The diagnosis of rheumatic heart disease offers a good many pitfalls to one who neglects certain fundamental symptoms and signs. In children the early disease is rather that of an acute toxaemia than a local joint infection or cardiac embarrassment. With evident arthritis, chorea, etc., this mistake is inexcusable. The obscure symptoms of loss of weight, anemia, low grade fever, repeated attacks of tonsillar infection, feeling tired and nervous should put one on guard. In such cases cardiac symptoms as such are not usually found, but these are the cases in which prevention becomes all important. One should be doubly careful in these cases not to make a too hasty diagnosis of heart involvement because of an irregular action or a soft systolic whiff heard at the apex. Should such a diagnosis be made, the next question is whether or

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not the heart disease is due to rheumatism. A rheumatic history is perforce important. This is not necessary to such a diagnosis, however, since, on close questioning, many cases will give a history suggestive of rheumatic disease or chorea many years previously, who present themselves with a lesion which must necessarily have been of long standing. Those cases following scarlet fever are in all clinical and anatomical respects similar to the true rheumatic type. Certain other cases with no rheumatic history are no doubt of rheumatic origin, since they simulate the latter so closely in their anatomical lesions and clinical course that it is impossible to differentiate them. This is particularly true of the chronic cases with a predominating cardiac enlargement and mitral insufficiency.

Having thus far made a diagnosis of rheumatic carditis, the extent of the damage must be ascertained. Both the valvular lesion and the myocardial injury must be determined in order to faithfully gauge the prognosis and treatment. The size of the cardiac chambers may be ascertained by (1) the position of the apex beat, (2) the area of cardiac impulse, (3) the force and duration of the systole, (4) position of the left cardiac border, (5) increase in cardiac dullness to the right of the sternum. This latter sign is especially recognizable by X-ray examination. Dyspnea and cyanosis are perhaps the more valuable symptoms referable to the functional capacity or efficiency of the heart muscle. The ability of the heart to return to its usual rate following mild exercise is a further test of value. A totally irregular heart is readily recognized as one having a more marked degree of impairment of function. Whenever possible an electrocardiagraphic examination will give valuable information. However, many cases are not suitably placed for such, and one's clinical observation must suffice. Of the lesions of the valves, one has to rely upon the time honored physical signs diagnostic of damage to each. The pure presystolic murmur accompanied by a thrill means mitral stenosis. A systolic murmur at the apex may mean either a relaxation of the ring or a true insufficiency,—usually the latter when the murmur is long, high pitched and loud, and definitely transmitted. A diastolic murmur heard over the entire precordium and especially along the left sternal border, extending to the vessels of the neck and accompanied by a slow, hard pulse, usually indicates aortic disease. Lesions of the tricuspid and pulmonary valves are of more academic than practical interest. The pericardium infrequently escapes injury when there is a moderately severe infection of either the myocardium or valves, and, while the typical to and fro friction rub may not be heard at once, repeated examinations will probably reveal at some time such a suspicious sound. The rub is usually more clearly brought out by firm pressure of the stethoscope and seems nearer the ear during such pressure. The rub may be present for only a short period of time and hence is frequently overlooked. Later, effusion may be present, giving the typical cone shape. Poynton and others deny its occurrence to such an extent as to give physical signs, but with the shape and rapid increase in size of the cardiac dullness and a lessening of the intensity of the heart sounds, such a diagnosis may be made with a fair degree of certainty. Later, chronic adhesions may occur with an enormous and persistently enlarged heart.

Since it is established that the heart is damaged by the infection, is it possible to locate a focus and prove it active? As stated before, a rise of temperature is in the majority of cases a certain proof of such an active focus. A colored girl of fifteen, who had been followed for a number of years, had an exacerbation of symptoms accompanied by temperature which proved to be a chronic appendicitis, the removal of which was followed by an immediate subsidence of temperature and a gain in weight of fifteen pounds and improvement in heart action. Many other cases have no temperature but show a progressive and persistent loss of weight, with anemia or tachycardia. A weekly blood count in these cases may be the only indication of an infection and should be part of the routine investigation.

Coombs, in his excellent monograph on Rheumatic Heart Disease, gives the most reliable figures thus far by which to gauge the prognosis of these cases. In 600 odd cases seen, he has been able to trace the majority over a period of fifteen or more years. The cases were divided into groups, one consisting of those cases seen in childhood or during the active phase of the disease, and the other comprising those seen for the first time after the

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lesion had become well established. The childhood group was further divided into undoubted cases of the disease and those of a doubtful character. Of the active positive group, there were 218 traced; 5 per cent died in the first year, 11 per cent within five years, and 21 per cent within ten years. These figures are in marked contrast to the group of doubtful cases in which only 6.5 per cent were found to have died in the same length of time. Of this group, thirty-one cases were followed for over ten years with a disappearance of all signs of disease in fourteen, eight cases remained the same, while nine showed an increase in signs of permanent valvular damage. A more cheerful note is found in the statement that of 200 undoubted cases of early rheumatic heart disease, 25 per cent showed no evidence of cardiac involvement after fifteen years. Thus, there is definite evidence of the value of close follow up in those very doubtful and suspicious cases. These facts seem to justify a conclusion that those individuals developing early signs of carditis have gotten an infection which proves fatal in one-fifth of the total, with marked functional impairment in the others, while the suspicious cases are only mildly infected or close attention has been of marked benefit to them. In the second large group in which the disease had become well established when first seen, the age of onset was found by careful history to have been at an average of 14.6 years, as against an average for the first group at ten years. The average age of this group when first seen was twenty-seven years. Of these 281 cases, sixteen died before twenty years of age, ten from non-cardiac causes; of 245 traced to age thirty, thirty-eight died of cardiac disease; of 192 traced to age forty, seventy-five died of cardiac causes; eight-three cases were found over the age of forty. Of 167 deaths due to rheumatic carditis in this group, it was found that the second decade showed the highest percentage. The figures do not take into consideration the ability of the patient to work or carry on any of the useful functions of child or adult. Many of these patients will continue to work as long as they are able to get about while others become invalids in a short time. The economic status invariably plays a part. So many have found it impossible to complete a school education sufficient to enable them to do more than ordinary labor, whereas a more sedentary occupation would no doubt have given them a longer span of economic independence as well as life. And while many other factors enter into the cause of death and incapacity for work, such as environment, heredity, pregnancy, age of onset, etc., perhaps the most important are the mode of onset and subsequent recurrence of the rheumatic infection. In England, subcutaneous nodes found early in the disease are considered of serious omen, a finding seldom noted here; with primary cardiac symptoms coming second, while joint symptoms and chorea follow in order. In general, one may gauge prognosis by two principles: (1) The severity of the cardiac lesion is proportional to the intensity of the rheumatic infection; (2) The failure of the myocardium is evidence of the direct invasion of the heart muscle by the disease, or the mechanical disability of the valves.

Due to the fact that rheumatic heart disease is an acute infection, causing a chronic crippling of an essential organ of the body, the treatment of the disease is as varied as its numerous symptoms. Obviously the mild attack with symptoms suggestive of cardiac involvement does not deserve the immediate care of a severe attack with definite joint pains and myocardial weakness followed by chronic valvular disease. It is impossible in so short a time to do justice to any one procedure and I can only mention in a broad way the application of the more important ones. Rest in any acute infection is of first importance and should be instituted at once for such length of time as symptoms indicate. In the younger child, due care should be exercised as to the length of time complete rest is imposed, since more harm than good may be done. It is in convalescence that special care must be exercised. Here all the good previously accomplished may be lost by too hasty permission to walk, to go to school, to resume work, etc. It is a peculiar but definite observation that few children will play beyond mild symptoms of distress. Just here one encounters the great stumbling block in the path of all cardiacs. Of what type of work is he physically and mentally capable? On the one hand is the child who has a moderately severe cardiac involvement, and has obtained a reasonable amount of education of a vocational character which he follows through a number of pro-

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ductive years. On the other hand is the patient who has not had such an education and who breaks down under all manual labor, the only work which he is mentally fitted to do, and who finally becomes a public charge—to die at the age of twenty-five or thirty years. This is the need at present most pressing,—the establishment of vocational training and occupation for the chronic cripple, whether he be cardiac, tubercular, etc. And while this restraint must be put on all cardiacs, they must be encouraged to do what they can without symptoms of distress. They must be given something to do which will stimulate them to mental cheerfulness and physical improvement. We have learned to do this with the tubercular patient and it must be taught to the cardiac.

The use of sodium salicylate or acetyl salicylic acid with bicarbonate of soda may be spoken of as almost specific for the acute attack, especially as we have no other drugs which can compare with them in their action. Reasonably large doses over several days past the febrile stage seem most effectual. Open air and diet are here as essential as in any chronic disease with a tendency to loss of weight, anemia, etc. The use of drugs in the later stages of cases with more or less failure of the heart is an evening's program in itself, and I only mention digitalis, caffeine and opium to say that they are more firmly entrenched in their usefulness than ever before. No organ which has suffered a pathological change, such as a heart during an attack of rheumatic fever, can be restored to its original condition by the most ingenious treatment known. Hence, it is not necessary for me to mention prevention in connection with rheumatic heart disease except to emphasize certain phases which may escape casual observation. Investigations by the bacteriologist toward isolation of the causative organism, and by the clinician as to the effect of diet, climate, heredity, etc., are essential to the future obliteration of the disease. Foci of infection, such as we recognize at the present as probable causative factors including diseased tonsils, teeth, sinuses, etc., must be dealt with in the most intelligent manner recommended from time to time. And while there is a great deal of argument for and against the beneficial effects derived from the removal of diseased tonsils, statistics of several groups of cases do not show the success we would like or might anticipate. Kaiser has recently reported a series of 48,000 school children in which 20,000 had had tonsils removed. The incidence of rheumatic fever, chorea, joint pains, etc., occurred practically the same number of times in the two groups. Cardiac complications were found to be less in the tonsillectomized group, however, and some of the cases had already developed rheumatic heart disease before operation. Ingerman and Wilson quote 76 per cent recurrences in operated cases and 80 per cent in a control group. Mackie found 80.6 per cent of 393 cases of rheumatic fever had foci of infection as against 67 per cent incidence in a control group of 400, with 58.7 per cent of infected tonsils in the first compared to 27.5 per cent in the latter. Dental sepsis was a common finding in each, a condition which seems to be on the increase, and which is related not only to rheumatic fever, but to recurrent and persistent coughs, colds, sore throats, etc.

But by far the greatest need at present with our limited knowledge is the recognition of the incipient cases. Growing pains, twitchings of an early chorea, loss of weight and anemia must be recognized as serious symptoms, and should not go unnoticed. The student's concept of rheumatic cardiac disease must be made broader than the usual text-book description. He must visualize the insidious onset of mild symptoms which progress to a severe toxic disease with general cardiac damage and not just the establishment of an anatomical lesion called mitral stenosis.

And, lastly, the parent and patient must be taught the seriousness of early symptoms and their care, in order that the patient may be given a fighting chance to save for himself years of comfort and usefulness.

2002 *R Street, Northwest.*

PERFORATING FOREIGN BODIES IN THE ESOPHAGUS.

Report of Three Cases.

By E. TRIBLE GATEWOOD, M. D., Richmond, Va.

The esophagus may be invaded by any substance of the animal, vegetable or mineral group and, debarring symptoms of dyspnea, they should always be regarded more serious than like substances in the air passages.

The esophagus is a septic organ and very

intolerant to any form of trauma. Objects of smooth contour, such as coins, etc., are rarely harmful, even though they remain in the esophagus many days.

Perforating or cutting foreign bodies in the esophagus are always a source of danger, and this is especially true if left unrecognized for many days.

Infection following trauma, incident to foreign bodies in the cervical esophagus, usually results in a cellulitis, and infection following those in the thoracic esophagus frequently causes mediastinal abscesses with their dreaded symptoms. Foreign bodies of this nature in the thoracic portion of the esophagus may also perforate the pleura and cause complications.

Fig. 1.—Case 1, showing position of rabbit's rib.

Patients having pain about the chest during or after swallowing should be regarded as a foreign body suspect, and should not only receive X-ray film study, but barium mixture in fluid and capsule form under the fluoroscope. Many of these cases will be negative to the actual foreign body demonstration. However, a large percentage will show some esophageal dysfunction, and all such cases, of course, should be further studied with the esophagoscope. Generally speaking, cases giving a history of pain upon swallowing and dysphagia should be esophagoscoped, though X-ray studies prove negative.

Two of the following cases emphasize that esophageal foreign bodies are not always suspected, though the patient gives a definite history of such.

Case 1.—White man, aged thirty years, stated that, while eating rabbit stew the previous day, he was suddenly conscious of a sticking sensation in the upper part of the chest. He consulted a physician and received little relief. The next day the pain continued and swallowing was difficult and painful so he consulted another physician, who suspected a foreign body and referred the patient for study.

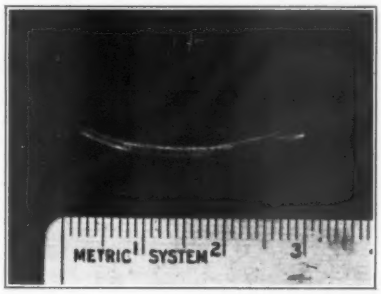

Fig. 2.—Case 1, Photograph of rabbit's rib.

Fluoroscopic examination with barium fluid and capsules was indefinite, though a film after swallowing barium fluid showed a faint outline of a bone that appeared to be coated with barium.

The patient was admitted to the hospital and esophagoscoped. A bone simulating a rabbit's rib was found to be perforating the posterior

Fig. 3.—Case 2, Lateral view showing barium capsules lodged above oyster shell.

esophageal wall with one end pointing upward and free. The bone was removed and the patient had no complications, as the sojourn was short. Rest, bismuth and liquids for three days constituted the post-operative treatment. Recovery was uneventful.

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Case 2.—White woman, aged forty-five years, stated that, six days previously when eating large oysters, she was suddenly and severely seized with pain through the lower central portion of her chest. She called a physician promptly and received treatment that day and the following two with indifferent relief. The third day swallowing was very painful and difficult and the following day another physician was called. She was referred for X-ray study which revealed complete occlusion of the lower esophagus, depicting a condition not unlike malignancy or cardio-spasm before dilatation.

The patient was admitted to the hospital and esophagoscopy was decided upon; after

Fig. 4.—Case 2, Photograph of oyster shell.

reaching the occluded area, persistent and gentle manipulation with the esophagoscope exposed the center edge of an oyster shell. The sojourn was long (five days) and the shell was large, therefore the edge caused considerable trauma with inflammatory occlusion. The shell apparently reached its destination by adhering to the side of a large oyster before being detached.

The patient's temperature when admitted to the hospital was one hundred and ranged around one hundred and two after the shell was removed.

Post-operative treatment consisted of morphine, sterile water and bismuth for three days. The patient was discharged on the fifth day relieved.

Case 3.—White woman, aged twenty-seven years, stated that, while eating a quail two days previously, she was suddenly conscious of pain in the chest. The next day swallowing was painful and difficult. X-ray films were negative, barium mixture with the fluoroscope showed a partially obstructed passage way; otherwise it was negative. The patient was admitted to the hospital and esophagoscopy was done and a bone simulating a quail's rib

Fig. 5.—Case 3, shows barium lodged above small bone.

was found, one end of the bone perforating the right lateral esophageal wall and the other end free.

The bone was removed and the after treatment consisted of bismuth and liquids for the first few days. Recovery was uneventful.

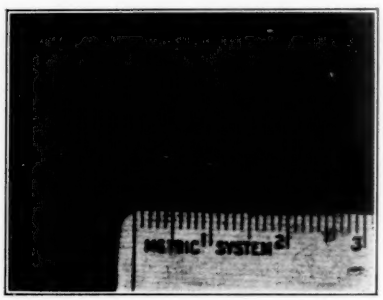

Fig. 6.—Case 3, Photograph of quail bone.

Summary

Foreign bodies of a traumatic nature in the esophagus should be removed at the earliest possible moment.

Histories of a doubtful nature should at least excite suspicion sufficient to justify esophageal study.

The earlier such cases are recognized and the offending objects removed, the less likely the patient is to encounter secondary complications.

Professional Building.

BASIC PRINCIPLES IN THE TREATMENT OF SYPHILIS.*

By DUDLEY C. SMITH, B. S., M. D., University, Va.

No claim for originality is made for this article. Ideas, opinions, conclusions and even phraseology are freely borrowed from recognized authorities on this subject.

The prevalence of syphilis makes it obligatory that all medical men have proper information regarding the treatment of this disease. All specialists and practitioners will not care to know the technical details regarding treatment of syphilis, but it is desirable that they know enough about the general principles to determine whether or not the patients whom they have referred are being managed efficiently.

The most practical way to eradicate this disease is to eliminate the foci of infection by widespread use of modern syphilotherapy. This, of course, presupposes widespread use of modern diagnostic methods. In addition to the public health problem of syphilis, the individual syphilitic patient is entitled to careful and scientific handling. The treatment of syphilis has developed to such a stage of accuracy and simplicity that a syphilologist is not essential in the majority of cases.

The curability of a syphilitic patient is greatly influenced by the duration of the disease, the pathological changes produced and the amount and kind of treatment given. The result desired is to eradicate the causative agent (treponema pallidum) from the patient's body with a minimum of permanent damage. The permanent injury may be a result of the disease or untoward effects of the therapeutic agents.

The reaction of the human host to the invading treponemata is much the same no matter what tissue or tissues are involved. The changes produced by the parasite and the accompanying reactions occur in a fairly orderly fashion in most instances. In acquired infections the treponemata lodge between the tissue cells and begin to multiply. Two changes of importance follow the implantation of these organisms, first the local reaction and second the spread of the parasite. It is now well established that in about forty-eight hours after the initial inoculation the multiplying treponemata have spread throughout the body, that is long before the appearance of the chancre the infection has become generalized.

At the point of entry there occurs a characteristic tissue reaction. In brief this consists of lymphocytic infiltration and hyperplasia of connective tissue elements. The changes are mainly in the walls of and about the blood vessels with the production of an obliterative endarteritis. As a consequence of the above processes and possibly to some extent toxins elaborated by the parasites, degenerative and fibrotic changes begin. Ordinarily in three to four weeks after the inoculation this process has so progressed that a gross change can be observed. This manifestation is the chancre. All during this time the generalized septicemia with the treponemes has been progressing and shortly other gross abnormalities appear. Throughout the various tissues of the body reactions occur similar to those at the location of the primary lesions; in other words innumerable "chancres" develop.

In time the protective or immunity influences of the host are observable, the primary chancre begins to heal and the generalized lesions subside. However, the immunological efforts on the part of the human body are probably never sufficient to produce a cure. The parasites decrease in numbers but two conditions remain which contribute to the later manifestations in this disease. First, the nests of active treponemes will cause local pathology in tissue where they are located and also act as foci for repeated dissemination with clinical relapses. Second, the tissues have developed a hypersusceptibility to the organisms in consequence of which a few parasites can cause marked tissue damage. The tissue injury is due to fibrosis or scar formation, deficient vascular supply and direct toxic degeneration.

It is apparent from the above statements that there are two stages or phases in syphilitic infection requiring different types of treatment. In the early stage of the disease vigorous treponemicidal agents are immediately indicated, the object being to destroy all the treponemata before they become entrenched in the tissues. The earlier a diagnosis is made the greater the chance of accomplishing this type of cure. For this reason early dark-field examinations of all genital and suspicious extra-genital lesions are important.

In late syphilis after the organisms have be-

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come entrenched behind a barrier of fibrosis and poor blood supply the plan of attack changes. Instead of employing forcible broadside measures it is best to vary the strategy by utilizing other methods. An attempt is made to increase the specific defensive mechanisms of the host, to break down the entrenchments of the parasite and in addition use cautiously the more powerful treponemicidal drugs. Besides the elimination of the parasites the restoration of pathological organs to normal or near normal is sought.

From a chemical standpoint there are four groups of substances to be considered in the treatment of syphilis, namely, the organic arsenicals, bismuth, mercury and iodides. The arsenicals, bismuth and mercury have both specific and non-specific actions. They also have direct destructive and resistance-building properties. The iodides are primarily fibrous tissue solvents. Best results can probably be obtained by properly combining these remedies in all cases. The weakness in one can be supplemented by the action of another.

The most important organic arsenicals are arsphenamine, neoarsphenamine and sulpharsphenamine. Each of these has certain properties which make it the drug of choice under certain conditions. Arsphenamine is the most uniform and active treponemicidal agent available at the present time. It is more stable and has a higher therapeutic index than the other arsenicals. Preparation and administration is somewhat more complicated than in the case of the substitutes. Immediate and late reactions following arsphenamine are probably fewer, certainly no more, than following the other arsenic preparations. Its elimination from the body is slower and thus its action is more prolonged. There are fewer relapses following its use.

Neoarsphenamine is neutral in reaction and therefore does not have to be alkalinized and is more soluble than arsphenamine. It is easy to prepare and administer. The injections should be given more often and the total dosage should be about double that of arsphenamine. It is less stable and less uniform in its treponemicidal property.

Sulpharsphenamine has the properties of marked solubility, stability, and non-irritating when injected subcutaneously or intramuscularly, and has about the same treponemicidal action as neoarsphenomine. It is valuable when intravenous injections are impossible or when they are followed by untoward reactions. It is being used in congenital syphilis. Some authorities believe that the intramuscular method of administering the arsenicals is the best method and for this reason favor sulpharsphenamine.

The properties of the above arsenicals can be summarized as follows: high treponemicidal efficiency, acts rapidly making infectious lesions non-infectious quickly, some immediate and late toxic reactions, occasionally an Herxheimer flare-up, only slight renal irritation, general stimulant and only slight specific resistance builder.

Another arsenical of much importance in the treatment of the paretic form of syphilis of the nervous system is tryparsamide. Here it should be mentioned that the malarial treatment is well established as an efficient additional method in paresis.

During the last few years bismuth has acquired a definite place in syphilotherapy. The salts are given by intramuscular injections. Bismuth is inferior to the arsphenamines in treponemicidal value but is superior in this respect to mercury. It is thought to have a high specific resistance-building value. Its addition to routine treatment decreases relapses and the number of resistant cases. Because of its slow absorption, prolonged effect and moderate treponemicidal action it is valuable in the early treatment of cardiovascular, hepatic and other forms of late visceral syphilis. The local reactions following injections are insignificant. Sodium potassium tartrobismuthate and bismuth salicylate in oily suspensions are probably most extensively used but several other preparations are available. The dose is 0.1 gm. to 0.2 gm. every five to seven days.

Past experiences warrant the retention of mercury in the routine treatment of syphilis. It has a low treponemicidal value but a high specific resistance-building value. It is cheap and can be taken by the patient himself. It is highly toxic for the kidneys. Administration by inunction is probably the most popular method at present.

The iodides have very slight if any specific action in syphilis, though they have the property of assisting in the absorption of granulomatous tissue. This action is desirable in all stages of syphilis since fibrosis is one of the

earliest changes. Oral administration is probably as efficient as any other method because of the rapidity of the absorption of the drug.

In early syphilis, rapid destruction of the germ is indicated. This is best accomplished with one of the arsphenamines. In addition to the curative value of this plan of procedure the patient is quickly made non-infectious. The arsphenamines should be followed by the remedies with the property of increasing the patient's resistance to his infection.

It is worthwhile here to outline an acceptable routine for treating these cases. It is, of course, true that the treatment for syphilis cannot be completely standardized, but a majority of early cases can be handled in a routine way. Besides the measures necessary to make a diagnosis of syphilis the patient should have a thorough and complete physical examination including an urinalysis. It should be emphasized that NO TREATMENT SHOULD BE GIVEN BEFORE A DEFINITE DIAGNOSIS IS MADE. Abnormalities in the cardiovascular system, kidneys and liver should be especially looked for. At this time the patient is instructed regarding the nature of the infection, its complications, probability of a cure, hygienic directions, manner of living, care of body, especially mouth, danger of infection and necessity for prolonged treatment. The tact in handling different types of persons shown by the physician at this time determines largely the number of cures he obtains.

There follows a satisfactory plan of procedure. The first series of treatments, in an otherwise healthy person, consists of seven weeks arsenicals, ten weeks bismuth and eight weeks mercury. Arsphenamine (0.1 gm. per thirty pounds body weight) is given intravenously on first, third and seventh days and weekly thereafter for a total of eight injections. At the time of the seventh and eighth arsphenamine injections bismuth (0.1—0.2 gm.) is given into gluteal muscles and weekly until a total of ten injections are given. Then mercury is given, usually by daily inunction, for two months. During the mercury administration iodides are prescribed. Neoarsphenamine or sulpharsphenamine in a dosage of 0.15 gm. per thirty pounds of body weight on first, third, fifth and at five day intervals for a total of seven weeks can be substituted for the arsphenamine.

Following this series the patient is gone over again and a Wassermann is done. If there are found no contraindications a second series of treatments is given. This is similar to the series described except that the second injection of arsphenamine is omitted. On the result of this examination and Wassermann test preceding this second series, an idea in regard to prognosis may be obtained, but regardless of results of tests a complete second series is given. This covers the first year of treatment. The above scheme allows no rest periods, the administration of drugs overlaps and there is variation in the attack.

At the end of the second series the patient is again gone over, a spinal fluid examination is made and blood Wassermann is repeated. If there is no evidence of active syphilis mercury by inunction or by injection and iodides are given for three month periods followed by a month rest period throughout second year unless there develops some clinical or serological evidence of relapse. The examinations and tests are repeated following each rest period and if a relapse occurs at any time a series of treatments described above is given.

The third year is one of observation only, unless evidence of the disease becomes manifest. At three to four month intervals the condition of the patient is investigated. At the end of this time if there has been no evidence of infection during the preceding two years the patient is discharged. The appearance during this time of evidence of activity requires institution of the more vigorous measures and prolongation of treatment.

The primary and secondary stages of syphilis are followed by periods of apparent latency or by tertiary manifestation when untreated or insufficiently treated. Some observers think that a small amount of treatment, that is a "few shots", by interrupting the host's own resistance mechanism, increases the tendency to serious tertiary type pathology. Disappearance of the outward signs of the malady is no indication that the treponemes are not multiplying in and damaging other tissues. The results are fibrosis, vascular occlusion, specific hypersensitiveness and degeneration. This may be a diffuse process, as in cirrhosis of the liver; or localized, as in a gumma of the sternum. Any and usually many parts of the anatomy may be involved. One or more organs of the body may be functioning inadequately as a result. The patients are

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older and often present complicating abnormalities. Danger of contagion is decreased.

In early syphilis, as suggested before, a large number can be treated in a standardized way. It is readily seen though from the preceding facts that the treatment of late syphilis is a different problem. The tissue changes influence the efficacy of the remedies. Herxheimer reactions may occur if the strongly treponemicidal agents are used first. Too rapid healing by scar formations might cause an organ to become more functionally insufficient. A lowered tolerance for and retention of the drugs are the bases for untoward toxic effects.

The aim of treatment is primarily to prevent further tissue damage by the T. Pallida, healing of the diseased parts, and symptomatic improvement; then secondarily the eradication of the causative agent.

Thorough and painstaking examinations to detect all abnormalities is essential. Every available means for improving the general condition and relieving individual dysfunctions should be utilized. General and special medical measures should be used according to the findings in the individual case.

No attempt will be made here to give detailed instruction for the various phases of treatment of chronic syphilis. In brief, specific treatment should be started slowly, given less intensively but more prolonged. The reversal of the order of the series of treatments previously described with smaller dosage and longer intervals would be a satisfactory scheme for most cases of late syphilis.

No patient should be refused treatment because he cannot pay the regular fees. The same consideration in allowing deferred payment should be given these patients as any others. Every syphilitic person is a menace to a community and should not be neglected. The cost of drugs, apparatus, etc., is at present very reasonable.

It should be emphasized: (1) That the proper bases of treatment are: (a) a specific chemotherapy, (b) increasing the patient's own resistance, and (c) pathology of the disease; (2) prolonged treatment is essential; (3) a "few shots" are often harmful; (4) explicit instructions and tactful management are necessary to get a high percentage of cures; (5) physician's fees should be based on the patient's economic status; (6) syphilis presents an important public health problem; and (7) the technical details in the treatment of syphilis are important but not unusually complicated.

TULAREMIA.*

By G. G. HOWERY, M. D., Christiansburg, Va.

The recent development, severe course, and wide distribution of cases gives tularemia a prominent place in the newer diseases. My intention in presenting a paper on this subject is not to give you any new data on this disease, but with the hope that I may be of assistance to those not familiar to more readily recognize the early symptoms and thus avoid the error I came near making in my first cases.

The scarcity of available literature on this subject renders the diagnosis much more difficult than the common cases referred to in our textbooks, on account of all investigations having been of recent origin.

I have had three cases of tularemia in my practice, and saw one through the courtesy of Dr. J. G. Davis, Jr., of my town, all of which were very similar in nature, a short sketch of which I shall try to give later on in my paper.

Tularemia may be described as an acute infectious disease, possibly a bacteremia, caused by the bacterium tularense, and is transmitted to man through the bite of an insect, or an abrasion in the skin, following the handling of an infected animal, the most common one being our wild rabbit. This type of infection is known as the glandular or ulcero-glandular type. The infection may also enter through the conjunctiva when it is known as the oculo-glandular type, which form seems to be the most fatal, owing to the close proximity to the brain. There were three cases reported to have died in Lee County, Virginia, and a fourth came near dying, all in the same family, whose primary lesions were about the conjunctiva. A third type, known as the typhoid type, which has only been found so far in the laboratory workers, seems to show no primary lesions or glandular enlargements, but the blood responds to the agglutination test for tularemia and the symptoms are the same as the other types of the disease.

The *history* of this condition probably dates back as far as 1907, when it was reported by

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Dr. Ancill Martin, of Phoenix, Ariz. He called it "rabbit septicemia", and the infection was thought to have entered through the conjunctiva in these cases.

During 1911, Dr. Edward Francis, of the U. S. Board of Public Health, described it, calling it "deer fly fever", "rabbit fever", etc. It is to Dr. Francis we owe more than any other in the investigation of this disease. In this same year McCoy isolated the bacterium tularense from the plague-infected ground squirrel in Tulare County, California, and it was from this county that the bacteria derived its name. The bacterium tularense was not demonstrated in the human until 1914 by Vail. This is one of the few diseases described and investigated in full by American physicians.

Pathology: The primary lesion of tularemia occurs at some point of abrasion in the skin, which appears at first as a papule, to be followed later by an ulcer with a necrotic or suppurating center which has a punched out appearance. The ulcer or primary lesion is of a chronic type and is followed immediately by an enlargement of the regional lymph nodes, which may suppurate in a few weeks or they may disappear slowly, or they may even suppurate after several months have elapsed as they did in two of my cases. The liver and spleen in the animals infected have a characteristic spotted appearance; also, a similar spotted condition was found on autopsy in man.

Incubation: This period varies from two to ten days, averaging about three days.

Symptoms: The onset is sudden and is manifested by a chill, rise in temperature ranging from 101 to 105, headache, vomiting, severe aching, sweating and prostration, resembling —to my mind—a case of influenza or some acute septic condition. Fever is always present in tularemia and presents a characteristic type, giving a sudden initial rise at the onset of the disease, followed by a remission for a short period, and later return to former level, or nearly so, with a gradual return again to normal. After the first remission the patient often thinks he is well and wants to get out of bed and resume work, when the recurrence takes place. The entire febrile period lasts two or three weeks, and is followed by a slow convalescence requiring from several weeks to several months to return to a normal state of health. In my cases it required three or four months to regain their former strength.

Diagnosis: Always bear in mind the importance of a correct history in a suspected case, as to whether they have handled or dressed wild rabbits, or have been bitten by a fly, tick, or some animal which may have the disease or even fed on one that is diseased, such as the cat or dog. Look for a primary lesion which, if present, will be followed immediately by enlargement of the corresponding regional lymph glands. To verify your findings after the disease has been present two weeks, send a specimen of blood to the laboratory for the agglutination test. You may also produce the disease in the guinea pig by injecting some pus from the necrotic lesion into the guinea pig, or the germ may even enter through the unbroken skin.

Conclusions

1. Tularemia is a recognized disease in the United States, which should be more thoroughly studied with the hope for the discovery of some specific treatment.

2. The type most generally found by the general practitioner is the glandular or ulcero-glandular type, which shows varying degrees of systemic reaction, and renders it very interesting owing to the devitalizing effect on the patient.

3. While statistics show but a comparatively few deaths occurring from this disease as having been reported, yet there seems to me the possibility of more deaths having occurred and having been reported under a mistaken diagnosis.

4. The primary site of infection is similar in all glandular and ulcero-glandular cases, and the glands involved may gradually disappear or suppurate but should not be surgically removed.

Treatment: Rest in bed is most important. One attack confers immunity in man. Treat symptomatically during acute symptoms and later tonics may be indicated. The enlarged lymph glands should be incised only after suppuration or fluctuation has been well established.

No preventive vaccine or curative serum has been perfected nor has any special drug been found effective against tularemia.

Prophylaxis: This should be especially emphasized. Rubber gloves should be used by

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those who must handle rabbits unless done by those immunized by a previous attack. If rabbit meat must be eaten, it should be thoroughly cooked. The doctor in handling his patients, especially those with necrotic sores and suppurating glands, should use rubber gloves and strong disinfectants; so, also, should the laboratory workers.

Case Reports

1. Mrs. C., age 42, was seen on November 27, 1927, complaining of severe headache, with general bodily aching, chills, nausea, temperature 103. There was a small abrasion on left hand, showing typical signs of infection, which later became a necrotic sore or primary lesion. There was also enlargement of the glands leading to and including epitrochlear and axillary glands, which later had to be opened, taking six or eight months to entirely disappear. On questioning, the patient gave a history of having assisted her son, who is Case 2, dress some rabbits for the table about a week previously, and, despite the clear history in these cases, I was inclined to think of this as being influenza and was not sure of my diagnosis until two weeks later when I got a positive report from the blood sent to the laboratory. I might also state that both cases in this family had the typical recurrence of the fever after one week's remission. Blood test positive—1:1280.

2. Mr. S. C., age 18, the son of Case 1, was seen the same day with the same symptoms as his mother. This patient had the primary lesion on his hand with only the involvement of the axillary glands which, however, never suppurated and, on the whole, this case was more mild than Case 1. Blood test positive—1:1280.

3. S. F., single, age 17, came to my office January 30, 1928, complaining of a languid feeling, loss of appetite, and the history of a sore on his finger, which he had thought was a felon, and which had healed and left a decided scar. On examination I found an enlargement of the epitrochlear and axillary glands. He gave the history of an acute illness during the first of December, and further questioning revealed the fact that, after killing some rabbits, he had dressed them about one week previous to his sickness. Blood test was positive and his description of his previous illness fitted exactly that of an attack of tularemia. Several glands in this case suppurated and this patient, although two months after he had the infection, looked like one who had been severely sick. Blood test positive—1:2560 (note higher titre).

4. This case, seen through the courtesy of Dr. J. G. Davis, Jr., presented symptoms identical to those of my patients, except that the primary lesion was located on the right leg, with a corresponding involvement of the inguinal glands, with a suppurative inguinal adenitis later on. This case is one in which infection entered through the clothing, showing in my opinion the imperative need of prophylaxis. Blood test positive—1:1280.

TUBERCULOUS PNEUMONIA.*

By J. B. NICHOLLS, M. D., Catawba Sanatorium, Va.

We are all familiar with the acute exacerbations which occur at times in pulmonary tuberculosis. These acute exacerbations often mean a reactivation or extension, or both, of the tuberculosis. Often these exacerbations or "flare-ups" of the lung condition are accompanied with a pneumonic condition associated with the tuberculosis.

These acute inflammatory changes may be slight in extent or may involve a considerable portion of one or both lungs, and they are usually described in the textbooks as a tuberculous broncho-pneumonia or a tuberculous lobar pneumonia. The broncho-pneumonia is a somewhat scattered pneumonic condition which extends along the branches of the bronchial tree in one or more areas of the lung field, while the lobar pneumonia resembles the usual non-tuberculous lobar pneumonia in that there is a part or the whole of one or more lobes of the lungs involved. The broncho-pneumonic type is the most common.

These pneumonic conditions may occur with a patient at absolute rest in bed, or at times when the patient is on a limited amount of walking exercise; and, of course, the patient with pulmonary tuberculosis is more susceptible to a condition of this kind when he is up and going about and not taking any rest in bed during the day. Non-tuberculous pneumonic conditions are rather rare in patients under treatment in the Sanatorium.

As I understand the pathology of the condition, it is due to the tuberculous process

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where there may be few or many tubercles surrounded by a pneumonic inflammatory field. It is a reactivation of the body tissues, which accompanies the secondary infections. The body tissues do not show this type of inflammatory reaction to the tubercle bacillus in the primary infection. There is an exudate together with a cellular infiltration, which may be scattered somewhat throughout the lung fields, along the bronchi, giving a hazy appearance in the X-ray plates, due to the exudative process, with the mottled areas of increased density due to the presence of tubercles surrounded by the pneumonic process. The tubercles are not usually scattered throughout this pneumonic process in the beginning, but are located somewhat near the center of same. Later on the pneumonic area may become invaded with tubercles, due to the extension of the bacilli to the surrounding inflamed area.

The pneumonia is usually of a bronchiogenic origin, in that as a rule it is not spread by the circulating fluids, but is due to the aspiration of the tuberculous exudate and pus containing the bacilli along the bronchial tubes in one or several portions of the lungs.

The physical findings in these cases may be misleading in that often there are slight areas of broncho-pneumonia or even areas of lobar pneumonia which may be overlooked. Time and again we do not get any physical findings sufficient to enable us to make a diagnosis from the physical examination alone. When this inflammatory process is started, there may be moist rales over the area of involvement, somewhat scattered in the broncho-pneumonic type, and localized in the lobar type. In some cases the lobar type may give the usual physical findings of a lobar pneumonia, in that there is rather marked dullness together with harsh or bronchial breathing and increased whispered voice, which condition can be outlined fairly well from the physical. I would say, though, that this is the exception rather than the rule in these cases.

The X-ray examination of the chest is of more help in determining definitely what has taken place in the lungs, in that we get a picture of the somewhat scattered mottling along a part or parts of the bronchial tree in the broncho-pneumonic type, while there is more marked density and consolidation and caseation in the lobar type. As the lesion varies in extent and in density, as shown on the X-ray plate, the symptoms, also, may vary considerably, and the symptoms may be at considerable variance with the physical and X-ray findings in that there may be a somewhat wide spread broncho-pneumonic involvement, or even an involvement of the lobar type, without the patient having the marked symptoms which would be expected.

The range of symptoms varies all the way from practically none or very slight symptoms to an occasional picture of the usual lobar pneumonia, with markedly increased respiration, rapid pulse, some pain in the chest, and cyanosis, with marked elevation of temperature, ranging from 102 to 104. You need not necessarily look for the cyanosis in the tuberculous pneumonias. We should look for a pneumonic condition if the patient is getting along with practically none or slight elevation of temperature, and there is a sudden rise. Sometimes this temperature will go up from normal limit to 103 or 104 within a few hours. While we realize that the patient is ill, it is not necessarily a critical picture, from the aspect of the patient, during the beginning of this period. This temperature will often range from one to four weeks, remaining above normal all the time. The highest temperature ranges from 102 to 104, and there is no sudden crisis with the drop of temperature and the change in appearance of the patient. At first the temperature remains fairly high during the whole twenty-four hour period, and, later on, beginning about the second or third week, it becomes a more remittent type of fever.

Usually after four to six weeks, this temperature commences to decline some, and by that time you can see that there has been a considerable decline in the patient's condition, in that he will commence to look pale; he will show some emaciation, and he will be weak, and, at times, have rather marked night sweats. The expectoration, also, increases some, but not necessarily to any marked degree during the first one or two weeks. The leucocyte count is not necessarily elevated above the normal range, although there may be an increased lymphocytosis. When the expectoration commences to increase, there are often numerous tubercle bacilli in the sputum.

What must we look for so far as lung

changes are concerned in a condition of this kind, and what must we do?

First, we will consider the lung changes. It is not unusual for the inflammatory exudate to be gradually absorbed and the lung area to gradually clear and return to a somewhat normal appearance. Fortunately, this does happen at times in that, after a few months, with the gradual clearing of the inflammation, fibrotic changes appear in the lungs, sometimes without any apparent destruction of lung tissue. Unfortunately, in many cases, we do not get such a nice turn of affairs, with apparent recovery of the patient. The area or areas of consolidation go on to caseation, with ulceration and cavity formation. In addition to this, there may be a spread of these areas of consolidation, with increased rapidity of decline of the patient. This is what we are told in the textbooks to often suspect, and, while it is true, there are numbers of times when it does not happen. Following ulceration and cavity formation, the condition may end in hemorrhage, which causes the patient to be still more seriously ill.

What treatment is indicated? There are no specific drugs other than what your medical experience would call for as conditions arise.

As to the feeding of the patient, this should be determined by the condition of the patient from day to day. The patient with high elevation of temperature and marked symptoms, cannot, of course, take care of the solid foods well. Liquid nourishment and soft foods should be given as far as possible to help maintain body strength and prevent emaciation and weakness. As the temperature declines and the patient's digestive processes will take care of it, the return to solid food can be allowed. The effort all along is to allow the patient, so far as possible, as much food as can be taken care of comfortably, but at the same time, we must not overdo the thing.

We have to rely chiefly on absolute rest in bed. Even if the symptoms would not seem to indicate it, if we suspect that a pneumonic process is present, it is necessary that the patient remain quietly at rest in bed. He should remain at this absolute rest in bed indefinitely, and he should be allowed to get up only when the symptoms, physical and X-ray findings indicate that the lesion is clearing, or has cleared enough to enable him to do so without causing any reactivation or harm to himself. Absolute rest in bed for months at times will often bring about a clearing of the process, without any destructive changes in the lung tissue. No definite limit of time can be stated, for it all depends on the progress of the patient, and that is what we should be guided by.

Pneumothorax should always be considered in these cases, and where the patient is a suitable case for pneumothorax, collapse of the lung will often bring about improvement and results, in that it prevents the absorption of the toxins, the inflammatory process subsides more rapidly, and the patient improves much sooner than he would otherwise. When there is consolidation and caseation, in which case you can often look for ulceration with cavity formation, if one lung is at all suitable to stand the strain, collapse of the lung should be carried out. A collapse of the lung will often prevent cavity formation, in addition to bringing about a relief of symptoms, with a more rapid recovery of the patient.

During the acute stage of the disease, with active looking infiltration in the lungs and with moderate or severe symptoms, the patient is not usually suitable for thoracoplastic operation.

I think that the development of these pneumonic areas is often the cause of our being deceived in the prognosis of the case. Even when the patient is apparently getting along all right, this condition may develop and cause a marked change in the patient's condition within a short time. It accounts for the more rapidly progressive condition, when we had previously felt from our observation and examination of the patient that the prognosis was rather good. It accounts, also, for the more marked extension of the condition, which we ultimately find, than we suspected, the X-ray showing that we have a much more extensive and serious condition to contend with than we felt was indicated from the physical examination, symptoms, or general condition of the patient.

KEEP WELL!

No matter who you are or what you do, the biggest asset you have in life is your health. It gives you the ability and power to do things. Take good care of it.—*Selected.*

TREATMENT OF MALIGNANT DISEASES OF THE ORAL CAVITY.*

By S. W. BUDD, M. D., Richmond, Va.
McGuire Clinic.

During the past two decades I have watched surgery with its radicalism and ray-therapy with its conservatism struggle for supremacy in the treatment of malignant disease in the oral cavity. In spite of a tremendous expenditure of thought and energy on the part of a host of observers there has been but little improvement in the methods for the eradication of this dreaded disease. The bigotry amongst surgeons and ray-therapists is largely responsible for this state of affairs. To me a radical treatment tinged with conservatism or *vice versa* offers the only solution to this vexed question.

Theoretically, cancer of the mouth in the hands of a skillful surgeon should respond with some degree of certainty to radical surgery provided the surgery is radical enough. Yet it is not always possible to remove the diseased tissue no matter how painstaking or how extensive an operation may be. It is indeed disappointing to see a radical operation almost to the point of mutilation of the patient followed by a return of the disease.

There are so many factors that influence the treatment of malignant disease of the mouth that it would be impossible to enumerate them. The extent to which the disease has progressed, the location of the growth and metastasis, the character of the growth, the temperament and the social status of the patient are perhaps the most important. In other words, to use a shop-worn expression, every case presents a problem in itself.

It is well nigh impossible to describe the cases that react best to surgery, or to surgery and radium or to a combination of surgery, radium and X-ray. Local growths without gross evidence of metastases respond very satisfactorily to surgery, or to radium therapy, or a combination of the two methods. If metastases are present we are confronted with an entirely different problem and there is no field in medicine where a nicety of judgment is more demanded. It is imperative that the surgeon and the ray-therapist consult before a decision as to the method of treatment to be made. If the disease is widespread, extensive surgery is neither safe nor humane. The mutilations that follow radical surgical procedures about the face serve only to make more uncomfortable a very miserable individual and it is very questionable if we materially prolong life.

We have adopted a conservative attack in these cases, and we believe that our results are as good or even better than if we attempted radical surgery. We rely on electric coagulation, when perfectly safe, and radium emanations locally, and X-ray and radium implants into the metastases. We recognize the importance of block dissection of the glands followed by X-ray and radium implantations, but recently we have not practiced this method of attack—perhaps our results would have been better had we done so.

For simplicity of record, Dr. W. L. Peple and myself have found it very convenient to group our oral cancers into four groups, depending on the extent of the involvement. The classification is very similar to the one now used and described by Dr. Peple in a paper, "Malignant Diseases of the Cervix", namely:

CLASS I. Precancerous conditions.

CLASS II. Lesions without apparent metastases.

CLASS III. Lesions with a diameter not exceeding three cms. with moderate metastases.

CLASS IV. Large growths with extensive metastases.

This grouping enables us to state the expectancy in oral cancers and it will be invaluable in event a statistical study is desired.

CLASS 1.—In Class I we place the precancerous lesion, such as leucoplakia, chronic ulcers, cracked lip, and irritated papillomas. These lesions are not malignant and may never be so, but it is wise to clean them up if possible, instead of waiting for developments. Oral hygiene, the extraction of a tooth, a cauterization or a small application of radium by means of a plaque is generally sufficient to remove this type of lesion.

CASE REPORT: Mr. C. E. T., farmer, age 53, came into the Clinic June 23, 1924, complaining of a sore lip. He had been suffering with a cracking lip for years but always the lip would heal. This time a sore appeared during the spring and has grown steadily in size. Recently the lip has bled, and two or three nights ago he had a profuse hemorrhage following a slight trauma. The patient was an inveterate smoker, but for the past two or three months

*Read before the Southside Virginia Medical Society, September, 1928, at Kenbridge, Va.

he has not smoked. The ulcer on the lip was about one cm. in diameter and was covered by a scab. The edges of the ulcer were slightly elevated above the surface of the lip. There was a moderate induration about the ulcer. There were no cervical glands. The Wassermann was negative. The patient was treated with a 25 mg. double strength plaque unscreened for one hour. There was considerable reaction following the treatment which lasted about six weeks. He was seen two months after treatment and at that time the ulcer had completely disappeared. There has been no return of the ulcer.

Class II.—In Class II we place ulcerative leucoplakia and superficial local growths that are definitely malignant but show no signs of metastases. These lesions are treated locally. Destruction or removal of the growth will invariably cure it. It must be borne in mind that early metastases may take place without gross evidence, and for safety even though the growth is destroyed locally we advocate X-ray therapy to the neck.

Case Report: Mr. H. E. G., age 39, was seen in 1921. He complained of a sore mouth. There had been spitting up of small quantities of blood. He gave history of syphilis in 1908, and he also stated he was a heavy user of tobacco. The entire hard palate and a large part of the soft palate were covered by a leucoplakia area, the center of which showed an ulcer about 3½ cm. in length and 2 cm. in width. The edges of the ulcer were elevated and somewhat undermined. The base of the ulcer bled freely with the slightest trauma. The Wassermann test was negative. A portion from the edge of the ulcer showed a typical squamous cell epithelioma. There were no cervical glands. The patient was treated with an applicator to fit the roof of his mouth and 250 milligram hours were given. The radium was screened with brass and rubber. He received two similar treatments, one two months later and the second six months later. The ulcer disappeared. There has been no return of the condition.

Class III.—In Class III we place papillary or ulcerative growths having a diameter of from 1 to 3 cms. that show a moderate glandular metastasis. This class requires most active treatment, and it is in the treatment of this class that surgeons and radiologists have locked horns. Removal of the growth, if removal be possible either by cautery or by knife, is desirable before radium treatment is instituted; but extensive surgery such as removal of the tongue, resection of the jaw, removal of a cheek and other mutilations are in our opinion doubtful procedures and results do not justify them. Block dissection of the gland is also a debatable practice, yet I believe it well to cut down on the glands and, if there is not too much fixation of the glands or if there is not too much danger incurred to the patient, to remove as many as possible. Exposure of the glands affords an admirable opportunity to implant radium seeds in those that cannot be removed.

It is our practice in Class III carcinomas to destroy the growths with a cautery and to implant radium seeds in the growth occurring in the soft tissues or to apply radium element to those in the hard tissues. We are fortunate to have in the McGuire Clinic Dr. J. B. Williams, who makes admirable impressions of the alveolar ridge and hard palate out of a special preparation that does not generate secondary rays. With these impressions we are able to hold the radium in close contact with the growth until an adequate dose can be given. We give one millicurie of radon for each c.c. of growth, and our element treatments vary from 1,000 to 2,000 milligram hours.

Case Report: Mr. J. J. J., clerk, age 49, came to the Clinic May 21, 1926, complaining of sore tongue. The sore began about two months previous to admission with a small sore on the under surface of the tongue on the right side, and has grown steadily and rapidly. He has the habit of biting his tongue and frequently wakes at night from pain induced by tongue biting. There has been no bleeding or other symptoms other than a loss of weight. The growth was in the floor of the mouth and extended to the under surface of the tongue on the right side. The ulcer measured 2½ cms. by 2 cms. The edges of the ulcer were ragged and elevated. The base of the ulcer was covered by a gray membrane. The ulcer bled freely with trauma. There were palpable glands at the angle of the jaw. His Wassermann test was negative. Microscopic examination showed a squamous cell epithelioma Grade 2. The patient was treated with six radon seeds of 2 millicuries each. There was considerable reaction following the radium treatment which subsided in two months. The

ulcer entirely disappeared. The glands of the neck received two treatments with high voltage X-ray. There has been no demonstrable return of the condition.

Class IV.—In Class IV we place the advanced cases of carcinoma of the mouth. Cases with extensive ulcerations, with invasion of the bones of the mouth, with large metastatic glands, with salivary fistulae already established, with cachexia, wasting and other evidence of toxemia resulting from the disease, are included in this group. Type IV cases are hopelessly involved, and nothing can be done to remove the disease, and treatment in this class must be along palliative lines. Sometimes a cauterization, especially with electrical devices, or an implantation of the growth with radium may cause a temporary cessation of suffering. With the use of morphine and with the methods mentioned patients can be made fairly comfortable for months.

Case Report: Mr. J. H. G., a carpenter, age 58, came to the Clinic June 13, 1926, complaining of a sore mouth. He noticed a rough place on the right side of his cheek about eight months ago. It was thought by his local doctor that he had Vincent's angina and was treated for this condition for two or three months without improvement. He also received a paste treatment four or five months that aggravated his condition. He lost weight and there has been considerable pain in the cheek especially when he eats. There has been blood spitting almost constantly for the past two or three months, and on two or three occasions he has had small hemorrhages.

About four months ago glands appeared on the right side of his neck that have grown steadily. His ulcer on the cheek on admission was about 4 cms. in diameter. The edges were raised and there was a deep crater covered by a membrane. The ulcer bled with the slightest trauma. A section of the growth showed it to be a Grade 2 epithelioma. The glands in the neck were located near the angle of the jaw and along the deeper veins. The largest gland was about the size of a bantam egg. A stain from a scraping of the surface of the growth showed no Vincent's. His Wassermann was negative.

He was given seven hundred and fifty milligram hours of element screened by brass and rubber and held in place by a special application and also six millicuries of radon in the lower angle of the growth where it spread over the tongue. Two months later he received twelve millicuries of radon, and four months later five hundred milligram hours of radium. He had three series of X-ray treatments to glands of the neck. There has been considerable pain associated with his condition, but he has been able to stick at work.

The patient was in for observation about two months ago with a local return of the disease. He was cauterized and treated with ten millicuries of radon. The disease now has progressed since we first saw him but he can still work. We feel that this man has been given two years of comfort. We little expected him to live more than six months when we first saw him.

Sepsis invariably follows in the wake of an oral cancer and it should be as energetically combated as the growth itself. Impaction of food should be carefully guarded against. With a large sore in the mouth, efforts of deglutition are limited and food has a tendency to accumulate in ulcer craters and in the alveolar fossae. This food should be removed two or three times daily, and the mechanical cleansing of the mouth should be followed by copious baths with salt solution or some non-irritating antiseptic.

A careful microscopic examination of the growth should always precede all forms of therapy for malignant disease of the mouth. Already we have had several cases that were sent in for cancer that proved to be inflammatory conditions. One of these was a chancre of the lip that responded beautifully to antisyphilitic measures, and the others were simple infections. The importance of a correct diagnosis cannot be too strongly emphasized. Often a chancre, or a gumma, or a tuberculous process, or a slough following Vincent's angina, or a slough following the use of too much phenolphthalein or other phenol derivatives, may be confused with malignant disease of the mouth. Angiomas of the soft parts and osteomas and epuli in the bony portion of the oral cavity have also been erroneously diagnosed cancer.

Probably one of the most important phases in microscopic studies of oral cancer is the proper assortment of cases into the several grades proposed by Broders. Differentiation undoubtedly bears a very definite relation to

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malignancy although we should not lose sight of the fact that natural resistance and certain defensive measures that nature has endowed us with will retard the growth no matter how low it will scale in the process of differentiation. A very malignant tumor may run a prolonged course, or a relatively benign growth with the breaking down of the defensive barriers may run a very rapid one.

In looking over the records of our cases with a view to analyzing them, we found it impossible to correlate the records of two or three years ago with those of the present day. At that time no classification of the extent of the disease was attempted. Cancer cases were divided into hopeful and hopeless cases. The descriptions of exact amount of involvement were inadequate. There was no attempt then to grade malignancy. Cancers were just plain cancers and were grouped together. Naturally the percentage of cures was high. Not enough time has elapsed since we adopted our classification of oral cancers to give statistics that would be of value. But for a two year period, regardless of the location of the growth and the grade of malignancy of the tumor, it is our belief that the expectancy in Class I, or the precancerous conditions, should be at least 95 per cent; the expectancy in Class II, or local growths, should be approximately 75 per cent; in Class III, or moderately advanced cases, less than 25 per cent; and in Class IV, or advanced growths, less than 5 per cent. When three or four years have elapsed, we hope to have statistics that will be of real value—statistics that will take into account our classification, Broder's grading of malignancy, and the location of the growth.

In conclusion we would like to emphasize several points:

1. The importance of an early diagnosis of cancer of the oral cavity. This can be done only by educating our patients to present themselves for observation whenever a sore in the oral cavity does not heal very promptly.

2. The value of classifying cancer of the oral cavity according to the amount of pathology—in order to improve statistics and to give a lead as to expectancy.

3. The importance of careful microscopic examinations of the growth before instituting our treatment.

4. The importance of combating sepsis, especially in advanced cancers.

URETHRAL INFECTIONS.*

By W. W. S. BUTLER, JR., M. D., Roanoke, Va.

This subject has been selected because 80 per cent of these cases first come to the general practitioner. No disease produces more distress and childless homes nor more preventable operations than this. The average patient is too apt to be dismissed with a prescription for a syringe and some astringent injection and told to return in a week.

The importance of detailed care and of drinking a plenty of water cannot be put over except by frequent personal talks, and the necessary gentleness in use of local drugs had best be shown by daily visits for some time. It is not as important to make a slide as is the dark field in every ulcer or abrasion, but I will cite a few instances in which this step has been omitted. A boy, 18 years old, came in, with some discharge, and marked frequency and burning which he had had for six months. A slide showed many staphylococci and on cystoscopic examination a stone was found in his bladder and inside the stone a wax plug. This boy says he had tried to prevent wetting the bed at night by pushing a wax plug in the urethra. Another young man with a persistent mild urethritis proved to be a large infected hydronephrosis, and the urethritis cleared up when the kidney was removed. An infected diverticulum may also set up a urethritis. These and stone more often show staphylococci in a slide. Where there is a urethritis associated with a pyelitis, the colon bacilli are more often present, and not infrequently tuberculosis. A urethritis in which the pus shows organisms other than the gonococcus is practically always secondary to a focus which may be in the kidneys, bladder or adnexa and should be located by the usual methods of urologic diagnosis.

For the local treatment, the number of drugs testifies that there is no outstanding one. The most important feature is gentleness, and to secure this and to put over to the patient the importance of detailed care of himself, he should be seen by the doctor every day for the first ten days. My experience has been that one treatment a day gives the most satisfactory results. The drug which you use can exercise its bactericidal effect at most only a few hours and, except at the very start, the bacteria are too deep to be reached; it is the

*Read before the Southwestern Virginia Medical Society, at Wytheville, Va., September 27-28, 1928.

local tissue reaction which gives the result. Potassium permanganate has been used longer and the profession has come back to it more than to any one drug. Occasionally, particularly in a long standing infection, a single irrigation clears up the process. Of the drugs with the high bactericidal effect, mercurochrome and acriflavin are most in use at present. Neither has proven satisfactory to me. In a recent issue of the *Journal of Urology*, excellent results have been gotten with Boot's acriflavin used by a special technique. A 1-1000 solution when used within forty-eight hours and kept up twice daily for a week is reported as an unfailing and almost immediate relief in acute urethritis. The patient must be on his back and the solution is held in with adhesive and cotton so that there is no pressure to exclude any portion of the urethra from the acriflavin. This technique assumes that all the bacteria are reached and does not depend on nature to cure the process. I went to a great deal of trouble to get the special English preparation of acriflavin recommended, but regret that I could not get any such results with it. Mercurochrome also has produced too much irritation. If no local treatment is used, almost 100 per cent posterior infections will occur. A mild silver preparation has given the best results for me. Five per cent argyrol, preceded by a mild irrigation with permanganate when used once a day, will confine the infection to the anterior urethra in about half the cases. Pelouze, in his recent book on this subject, reports better results.

A plenty of water to drink is of more consequence than any special article of food. Other than to avoid alcohol and highly seasoned food, there are no special directions as to diet so long as the digestion is not upset by food or drugs. In a posterior infection, less water and a sedative will increase the intervals between voiding and allow rest to the inflamed area.

The treatment of chronic urethritis resolves itself into a determination of the cause—whether it be a focus which continually lights up, or a mild persistent urethritis. In the former, the gonococcus is usually present, though in the latter condition it has usually prepared the way for secondary bacteria to persist. Trauma does the most harm whether it be by instruments used on an inflamed urethra or by too strong drugs or too frequent use of mild applications. Irritation from alcohol or sexual excitement must be eliminated. The focus which takes the longest to heal is the prostate, and its treatment should last over several months, with rest periods, after which the expressed secretion should be examined microscopically for pus. Fortunately, the urethral follicles are shallow and heal or are obliterated by scar tssue. A common source of recurrent urethritis is the paraurethral follicles which are situated just inside the meatus. These can be obliterated by cautery, with acid, or with fulgurating needle, but take numerous efforts, being very persistent, and are frequently associated with mild hypospadias. The scar tissues due to an old area of infiltration or granulation in the urethra keep up a persistent urethritis and are associated with a prostatitis. These will be overlooked on passing a sound, but an acorn bougie as large as the meatus will admit, will locate these on withdrawing it, and the condition will not clear up until dilatations are also used.

Tuberculosis, loss in sleep or over-work, which lower the vitality, will cause a persistent mild urethritis which will clear up only with the general condition.

In this brief paper outlining my personal experience in treating this very common condition, I have tried to stress the fact that we assume a serious responsibility to the patient and to society when we treat any form of urethritis. Mild drugs with a minimum of trauma in acute stages and a close observation of the patient to assure his understanding and cooperation over a long period of time are a necessity for the best results.

Shenandoah Life Building.

NASAL ACCESSORY SINUSITIS.*

By T. A. POOLE, M. D., Washington, D. C.

The medical profession has for many years recognized the importance of nasal sinusitis, not only as a pathological entity, but in its casual and close relation to the secondary infections elsewhere in the body.

The symptoms and course of this ailment are well-known; at best, general and local treatment has too often been unsatisfactory.

These far reaching and harmful results to adjacent structures may be better understood

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when we consider the intimate relation between all the nasal sinuses and adjacent structures.

The severe and widespread epidemic of influenza in 1918 was followed by an aftermath of sinusitis. Many methods of treatment were involved, including surgery, but too many cases, even in the hands of the most skilful, whether by local, medical or surgical treatment, were frequently attended by an undesirable result.

Six years ago while in the clinics in Vienna with Dr. Alexander, Dr. Fisher and Dr. Beck, the writer was attracted by the mechanical treatment there employed, and at once began the development of the present idea, which is a modification of the old Politzer method of inflation, plus the process of gradual dilatation, infusion of medicated vapor, and aspirating or sucking pus, mucus or debris from the eustachian tubes, middle ears and sinuses. With this method the eustachian tube is opened, gradually and continuously, with vibratory massage of the drum though the external auditory canal cannot be of benefit unless the middle ear has been restored to normal. To do this, one must open the eustachian tube, and this method of treatment, to which your attention is now invited, will accomplish it in a majority of cases. All of these cavities are sprayed with an oily medicated vapor by this simple device, which also provides a thorough, gentle and safe suction—a perfect drainage of these numerous cavities, which is of primary and paramount importance not possessed by other methods.

In the development and perfection of this apparatus I desire to give credit, not only to the ideas suggested in Vienna, but also to the helpful advice from members of the staff of the New York Eye and Ear Hospital, Wills Hospital, London, England, and The Central Hospital, Lausanne, Swizterland.

In tabulating the history of 256 cases of positive chronic sinusitis treated in the past year, I have gleaned this information: of this number, 170 had ear, eustachian tube and hearing involvement; 149 had some eye or eye muscle disturbance; fifty-five had some asthmatic or bronchial involvement. It will, therefore, be noted that we have a widespread and serious problem to solve. In an effort to combat these conditions, I have evolved a method of treatment which, you will agree, should greatly alleviate many of these cases. This device, to sum up, has the following functions: spray with medicated oil, massage, and use good suction. As formerly stated, it is a modification of the Politzer method of inflation which we have all used for many years. This new method utilizes the closing of both nostrils with the nasal tips, which has been found to be very important, both for sinus medication, vibratory massage, inflation and suction. The following three history charts, one of each type of cases mentioned above, will further illustrate the value of this method:

Mr. R., age 22, had all of the symptoms of both minor and important sinusitis for ten years, getting worse each year, until the fall of 1924-25, when he had many operations. We opened his maxillary antrum twice; since that time nothing has been put in his nasal sinus except oil in some form, as I seldom irrigate with an antiseptic but always use the oil spray treatment. He is still on my list but I seldom see him for treatment for he has improved so much that he feels he is cured.

Mr. C., age 32, was seen August 10, 1928. He had marked sinusitis eye symptoms, and complained of catarrhal headaches since boyhood for which he had been treated a long time. He had had glasses adjusted, hoping for improvement in vision. Had five upper jaw teeth extracted. Fixation point eight inches; now, after treatment, fixation point five inches. Eyesight much improved; no headaches, feels better, color good, can do much more work and does not tire as easily, and can now use his eyes as much as he likes without discomfort. Declares he is well; I seldom see him.

Mr. H. had abscess in right ear, contracted during Spanish-American War, followed by purulent discharge, with continual noises in that ear for past thirty years. He was discharged from Army and given a pension due to the ear trouble. He can now hear equally well in both ears, no noises, no discharge and feels perfectly well.

These cases will illustrate that satisfactory results, both to patient and physician, may be obtained by this mechanical and therapeutic method of treatment.

In the 256 cases the records disclose it was necessary to perform but very few operations. Some may be further benefited by operations; however, very satisfactory results have been obtained without surgical interference, as will be noted.

Gentlemen, I thank you for your kind and courteous attention to this old, dry and sometimes "moist" subject.

Medical Science Building.

ROLE OF URETERS IN DISEASE OF THE FEMALE PELVIS.*

By GILBERT FRANKLIN DOUGLAS, M. D., Birmingham, Ala.

In discussion of this subject, let us consider, first, the anatomical structure with which we are dealing that we may have a clearer conception of the true pathology, symptomatology and diagnosis of diseases affecting same.

The ureters are two tubes which conduct urine from the kidneys into the bladder, commencing within the sinus of the kidney by a number of short truncated branches, the calices or infundibula. These unite either directly or indirectly to form a dilated pouch, the pelvis, from which the ureter, after passing through the hilum of the kidney, descends to the bladder. Calices are cup-like tubes encircling the apices of the Malpighian pyramids. Calices vary in number from eight to eighteen. These calices verge into two or three tubular divisions which, by their junction, form the pelvis or dilated portion of the ureter. The portion where the pelvis merges into the ureter proper is found opposite the spinous process of the first lumbar vertebra at which point it is accessible behind the peritoneum.

The ureter proper is a cylindrical membranous tube about sixteen inches in length and the diameter of a goose quill, same extending from pelvis of the kidney to the bladder. Its course is obliquely downward and inward through the lumbar region into the cavity of the pelvis, where it passes downward, forward and inward across the cavity to the base of the bladder into which it opens by a constricted orifice, after having passed obliquely for nearly an inch between its muscular and mucous coat. The lower part exhibits a spindle-shaped dilatation.

Relation: The ureters rest upon the psoas muscle, being covered by the peritoneum and crossed by branches of mesenteric arteries. Opposite the first piece of sacrum, it crosses either the common or external iliac artery and vein, lying behind the ilium on the right side and behind the sigmoid flexure on the left. In the pelvis it enters the posterior false ligament of the bladder. In the female the ureter is to the inner side of the uterine artery. At the wall of the pelvis, it passes forward and inward below the posterior layer of the broad ligament, running through the parametrium, then along the side or neck of the uterus and upper part of the vagina, being in contact with the anterior and lateral vaginal wall, and is crossed anteriorly by the uterine artery. At the base of the bladder the ureter is situated about two inches from the one on the opposite side.

Structure: The ureters are composed of three coats—(1) fibrous, (2) muscular, (3) mucous.

1. The fibrous coat is the same throughout the entire length of the duct, being continuous at one end with the fibrous capsules of the kidney at the floor of the sinus, while at the other it is lost in the fibrous structure of the bladder.

2. The muscular coat of the ureter in the pelvis of the kidney consists of two layers, longitudinal and circular. The longitudinal fibers become lost upon the sides of the papillae at the extremity of the calices, while the circular fibers may be traced surrounding the medullary structure in the same situation. In the ureter proper, muscular fibers are arranged in three distinct layers—(a) external, longitudinal, (b) middle, circular, and (c) an internal layer, which is less distinct.

The mucous coat is smooth and presents a few longitudinal folds which become effaced or smoothed out by distention. It is continuous with the mucous membrane of the bladder below, and its epithelium is of peculiar character and resembles that found in the bladder. It is known as transitional epithelium, and consists of several layers of cells of which the innermost—that is, cells in contact with the urine—are quadrilateral in shape, with concave margins, and thin outer surfaces into which fit the rounded ends of the cells of the second layer. The intermediate cells, more or less, resemble columnar epithelium and are pear-shaped, with round internal extremities which fit into the concavity of cells of the first layer, while the narrow external extremities are wedged in between the cells of the third layer. The external or third layer consists of conical or oval cells which vary in number in different parts and present processes that extend down into the basement membrane.

Arteries supplying the ureter are branches from the renal, internal iliac and inferior

*Read before the Chattahoochee Valley Medical and Surgical Association, at Warm Springs, Ga., July 11, 1928.

vesical. The nerves are derived from the inferior mesenteric and pelvic plexuses.

Lymph vessels from the ureter come off and terminate in the juxta-aortic and adjacent glands.

The ureter shares with the renal pelvis the pathological conditions to which the latter is liable. Suppuration, T. B., stone, and neoplasms inevitably involve the duct of the kidney. Congenital dilatation of the ureters is generally regarded as one of great rarity and passes entirely unnoticed in the ordinary textbook. It is probable that it is more common than is usually supposed. Boyd claims it is found in male children. He reported two cases, the ages of which were two and one-half and twelve years, respectively, the symptoms being those of gradually increasing urinary obstruction with dilatation of the bladder, while the ureters showed an accumulation of residual urine and failure of renal function. The greatly distended bladder walls eventually showed extreme hypertrophy. Some of the other pathological conditions that we find are stricture, which takes place at or near the lower orifice, but is seldom complete. All degrees of constriction may be seen, the most pronounced type resulting in a cyst formation of the vesical portion of the ureter. Strictures of less degree may not be followed by changes in the vesical portion of the ureter, but give rise to dilatation of the ureter as a whole. The same factors which cause stricture of the urethra may also affect the ureter—that is, infection, trauma, etc., although gonococcus infection of the ureter is uncommon.

Ureteral strictures of inflammatory origin are dilatable and are diagnosed by inability to pass the ordinary ureteral catheter, being accompanied by extreme pain as the catheter approaches the point of stricture. Urine which escapes through the catheter contains pus and blood. Dilatation may take place as the result of pressure on the ureter, or anything which obstructs the escape of urine into the bladder. Such conditions are accompanied by pain and symptoms referable to the kidney of the side affected.

The causes of long continued dilatation of the ureter may be classified as follows:

1. Spinal diseases that cause lack of innervation to the muscular wall of the ureter produce relaxation and the ureter becomes flabby. Dilated conditions thus resulting are almost always bilateral and are more or less serious in consequence.

2. Back pressure from obstruction in the urethra.

3. In the majority of pregnant women many observers have found that the ureters are dilated due to direct pressure of an enlarging uterus upon the ureters and to a disturbance of innervation of the muscle walls of the ureters. Examination of the ureter mouth does not show much change. Pyelitis often develops in these cases.

4. Mechanical obstruction is probably one of the most frequent causes of dilatation. If obstruction is not complete, dilatation follows; but when obstruction becomes complete, the functional activity of the kidney is lost. The ureter shares later in the dilatation, since the pelvis of the kidney dilates first. If disease conditions occur in the lower one-third, some changes may be noted in the bladder, but, as a rule, the conditions are entirely mechanical. The flow of urine from the ureteral opening is seen to be diminished and occurs at irregular intervals.

5. Inflammatory disease of the ureter may be a cause. This occurs most frequently in the vesical portion, due either to extra- or intra-ureteral conditions. In tubercular diseases of the ureter the dilatation is irregular owing to multiple stricture and uneven involvement of the tube.

There are three distinct types of obstruction:

1. Obstruction due to anomalous renal blood vessels which are soft: obstruction usually 25-27 c.m. from orifice of the ureter.

2. Obstruction due to tuberculosis; chief obstruction usually at or near vesical end. There are usually multiple points of obstruction due to multiple stricture; may occur at any point in course of the ureter. Changes in vesical mucous membrane surrounding opening are characteristic. Tubercle bacilli and pus are also present in the urine.

3. Obstruction due to calculi impacted in or descending the ureter. 30 per cent of cases show stone arrested near pelvis of the kidney; 15 per cent near brim of pelvis; and 55 per cent show stone impacted in vesical portion of the ureter. At the point where the stone becomes impacted the ureter is inflamed, swollen and sensitive, and may become ulcerated. Above the stone it is dilated; below the stone it is swollen, hyperemic and secretes more readily.

There may be a sudden bilateral anuria due to reflex secretory inhibition. There may be tenderness along the line of ureter.

If stone is lodged below brim of pelvis, vaginal or rectal examination may aid in diagnosing trouble. If stone is impacted in lower one-third of ureter, it usually causes considerable change at meatus, with some protrusion of mucous membrane due to swelling and edema.

Ureteral fistulae are usually found near the uretero-vesical junction if caused by infection or necrosis of ureter. Most are caused by operation or traumatic injury to the ureter, and a fistula resulting from traumatism may occur at any point in its course.

In considering the role of the ureter in diseases of the female pelvis, I have briefly hinted at the anatomy and pathology of these conduits of urine from kidney to bladder. Now let us more specifically consider the absolute necessity for proper consideration of the ureter from a diagnostic and therapeutic standpoint in the treatment of female pelvic conditions.

In considering the cancer problem in gynecology, especially where the cervix is involved, we have the ureters in close proximity, so that they become incarcerated in the inflamed mass of tissues about the broad ligament and, if scar tissue develops, we get a certain amount of obstruction of the ureters which causes symptoms of stricture, dilatation, pyelitis, etc. If operative procedures are instituted after the disease is pretty well advanced, we have often the surgical hazard of injury .to them unless they are carefully guarded during operation.

In operating for large fibroids, the ureters are frequently so misplaced that they are often either cut or traumatized at the time of operation—to such extent that a ureteritis will follow giving urological symptoms after recovery from operation.

The ureters, being made up of muscular tissue, mucous membrane, epithelial structure, etc., are capable of suffering inflammatory processes just as are other tissues in the body, and for this reason are entitled to proper consideration always in working out the diagnosis of a patient.

As these structures are endowed with their *pro rata* of nerves, blood vessels, lymphatics, etc., they are capable of giving pain when they have been traumatized or infected either from within or without, and, being in close relation to the lymphatics of the cervix, etc., I feel they receive infection at times through this source, which may become lodged and establish foci of infection as do other structures within the body.

Ureteral pathology is quite frequently associated with other pelvic trouble and, owing to the frequency of these concomitant troubles, ureteral diagnosis and therapy cease to be a subject for only the specialist in urology and gynecology to diagnose and treat, but every general practitioner, surgeon, pediatrician or anyone else doing abdominal or pelvic work or diagnosis should be on the alert.

Urinary tract infections in women are by no means uncommon; in fact, they are so often encountered until they consume a good part of the time of the gynecologist in both diagnosis and treatment. These infections are associated with improper drainage of the urinary tract, caused by pressure from without or obstruction from within, stones, stricture, kinks, etc.

No doubt a great many of the infections encountered are autogenous in origin instead of coming from below by extension upward, or from contiguous tissues.

For bacteriological examination of urine to be of any value it should be of catheterized specimens, and, of course, if cystoscopies are being done, urine examination should be of specimens collected from each kidney. Possibly there are no more vague symptoms dealt with in the lower abdomen and pelvis and more difficult to diagnose than those caused by ureteral pathology in its various forms, and for us to begin the ordeal by removing appendices, tubes, ovaries, and operations for other conditions, with the hope of removing symptoms, without first making a diagnosis, is to court disaster for our patient and defeat for ourselves.

The trend or tendency to properly work up a diagnosis is on the increase, but surely we, as ethical, honest medical men, still have to stand with our heads bowed in shame when we see the unscrupulous, fee-splitting, supposed-to-be gynecologist or surgeon operating to amputate the patient's "bank roll", instead of for the purpose of restoring health by obtaining a correct diagnosis in order that proper treatment may be given, even though it is not as spectacular as operating.

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My plea in this paper is for all of us, whether specialist or general practitioner, to approach the study of this problem of ureteral pathology as a definite entity, and, if necessary, diagnose by process of elimination, before we advise various and sundry operations, with the hope of relieving definite pain in the so-called neurotic patient. My five years' experience in dealing with insane hospital patients daily and my experience with gynecological work for a good many more years is that psychology, by improper surgical procedures or otherwise, usually will not relieve patients with pathology of the ureters unless proper treatment has been instituted.

So, in closing, let me suggest that we shall so practice that: "When the time comes for us to join the innumerable caravan, we may draw the drapery about our couch and lie down to pleasant dreams."

Suite 804-6 *Empire Building.*

THE MEDICAL GALL-BLADDER.*

By PHILIP JACOBSON, M. D., Petersburg, Va.

The term "Medical Gall-Bladder" was first introduced by the Mayos several years ago to indicate a gall-bladder which has been removed, not because of pathology found at the operating table but on account of a characteristic syndrome which has led to a diagnosis of gall-bladder disease and brought the patient to operation. The pathology found has certainly not been compatible with the severity of the symptoms; the few adhesions, slight thickening of the gall-bladder wall or moderate increase in size are much less than was expected and cause doubt as to the correctness of the diagnosis. But the pre-operative clinical picture is such that the gall-bladder could not be excluded. Hence, in the absence of other findings, it is removed along with the appendix and complete relief has followed in so many cases that the diagnosis must have been correct and the procedure justified. Such cases are extremely common, so much so that the term "Medical Gall-Bladder" has become generally recognized among surgeons.

The clinical picture is easily discovered and does not differ from that of other gall-bladder conditions except, of course, in the severity and degree that would be produced by acute inflammatory processes, new growths or complete obstructions. Right upper quadrant pain, sometimes belt like, radiating to the back and right shoulder, belching and irregular uncomfortable digestive disturbances, although subject to many variations, usually comprise the syndrome. Often physical examination does not produce any clue to the diagnosis and cholecystograms have shown such gall-bladders well filled and emptying in the usual length of time.

This observation has been made many times, but, as yet, no explanation of the phenomenon has been agreed upon. E. Starr Judd, in an article on Gall-Bladder Surgery in the 1926 Mayo volume, points out that the condition is probably functional in character, but no mention of the nature of the function nor how it can be determined is made. Mentzer,* in his recent study of 14,000 gall-bladders found at autopsy, has demonstrated that over 91 per cent are chronically inflamed, but this cannot always be demonstrable grossly and it is difficult for the surgeon at the table to believe that he must wait for the subsequent corroboration of the miscroscope to justify his surgical procedure.

A possible explanation of the fact that a gall-bladder having very little demonstrable pathology may produce severe clinical syndromes suggested itself to me after a rather unusual case of cholelithiasis in which I removed the gall-bladder. The patient, a young, thin woman of twenty-four, had a history extending over a period of two years. The first year and a half she had typical gall-bladder attacks, but for the six months previous to operation she noticed that the attacks had subsided but were replaced by a constant, heavy, dull ache in the right upper quadrant which had recently become much worse. Diagnosis of cholelithiasis was easily made because the gall-bladder was palpable and the X-ray showed stones.

At operation the gall-bladder was found packed with stones but, upon attempting to remove it, I found that the cystic duct had amputated itself and that it was only necessary to ligate the cystic artery in order to easily shell out the gall-bladder. The appendix was then removed and the patient had an uneventful convalescence.

The cystic duct itself, when not grossly affected or strictures are not found and with-

*Read before the Southside Virginia Medical Association, December 11, 1928.

*J. A. M. A., Feb. 25, 1927.

out apparent pathology in the gall-bladder, is not usually considered the site of the trouble. Frequently during an exploratory, when the gall-bladder is palpated, the remark is made that the bladder is soft, no stones are present and it empties easily and little attention is paid the cystic duct when the condition of the gall-bladder and common duct is thought to be normal.

The effect of slight pathological changes upon the gall-bladder and upon the cystic duct may, however, be quite different. In the gall-bladder little or no effect upon the contractility is noted unless the changes be demonstrable grossly. But in the cystic duct a very slight change may seriously interfere with its delicate, confined mechanism. Although the mechanism of the filling and emptying of the gall-bladder is not thoroughly understood, yet it cannot be denied that interference with emptying must produce a syndrome of some sort which is probably due to tension of the gall-bladder wall above that which is normal. When the gall-bladder contracts, if the exit is not entirely free, or in other words the cystic duct does not permit the easy passage of bile, then the internal pressure in the gall-bladder will increase and pain results, probably through the same mechanism that causes pain when any other abdominal viscus become distended.

The anatomy and physiology of the cystic duct make it very liable to difficulties if even very slight pathological changes occur in it. The cystic duct is a sort of offshoot from the common duct, arising about the middle of the latter. For about one-third of its length it runs upward parallel to the common duct and may be adherent to it. It then makes a short goose-neck curve, downwards for about 1 cm. until it merges into and becomes continuous with the ampulla of the gall-bladder. The anatomical variations are extremely numerous, its diameter, length and direction being extremely variable. The length may be ½ to 4 cm. and the diameter may be nearly as great as that of the gall-bladder itself. It is covered with peritoneum beneath which is a layer of fibro-muscular tissue and it is lined by mucous membrane similar to that of the gall-bladder except that from 3 to 12 circular elevations are present because of the muscular bands which act as the valve. The duct then is a short tube with a complex internal mechanism, which could very easily be disturbed by alterations occurring in any or all of its layers, preventing the free operation of the valves and affecting especially dilatation.

For instance, a slight inflammatory change of the gall-bladder serosa, even though mild enough to produce only a few adhesions of the bladder to the liver, could, if extended down over the cystic duct, so thicken its peritoneum as to seriously interfere with its dilatation when the gall-bladder contractions were going on. Such changes in the peritoneal elasticity need only be very slight in order to interfere with dilatation of the duct. Slight inflammatory changes in the other layers may leave a degree of fibrosis in their wake which can have a similar effect upon the dilatation of the duct. That the duct of these gall-bladders may not be functioning properly can be demonstrated very often immediately after their removal. If one squeezes such a gall-bladder, the contents are seen coming through the cystic duct only after considerable pressure has been used—much more than it can generate by its inherent powers.

It is within the bounds of probability that slight changes in the walls of the cystic duct may interfere with its response to neurological stimuli. Filling of the gall-bladder which is dependent upon the increased pressure in the common duct resulting from the closing of its valve at the duodenum would hardly present any clinical manifestations if the cystic duct valve did not allow the entrance of bile. Small amounts may enter until enough to fill the bladder has accumulated. The operation is passive and the time element is not a factor. But when contractions of the gall-bladder occur and the response of the cystic duct is sluggish or inadequate the bile does not pass through it at a speed compatible with the rate the gall-bladder attempts to decrease its volume. Pain is the inevitable result.

The question that presents itself is—can a condition of the cystic duct which impairs its function be recognized at the operating table? Many times the gall-bladder feels and appears normal to the chagrin of both internist and surgeon. But in this condition the gall-bladder is not the point of attack. The cystic duct should be either palpated, or exposed. Palpation usually reveals the trouble as the duct can be easily felt as a cord which seems a little firmer than either ampulla of gall-

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bladder just above it or the common duct below. The fact that the gall-bladder might empty easily is not sufficient evidence for proving that the cystic duct is functioning, nor should its tenseness be considered as a manifestation of duct obstruction. The latter may exist normally during starvation and the former be only temporary. When the gall-bladder is emptied at the table, pressure far in excess of that which exists when the bladder empties itself, is used.

Upon what basis shall the surgeon determine when the gall-bladder should be removed? Certainly satisfactory results have attended the removal of the gall-bladder based upon the syndrome that has brought the patient to operation and the occasional meagre pathology present. Truly it is difficult to correctly estimate the functionability of an apparently normal duct at the operating table. The basis for estimation may be in the relative density of the cystic duct walls to those of the gall-bladder and the common duct—especially the latter, as determined by palpation—or in noting a certain stiffness in these ducts which seems to indicate their inability to function properly. The peritoneum of an affected duct also may be lighter in color than that of the gall-bladder or common duct. Normally, of course, the cystic duct is denser than the gall-bladder or common duct, suggesting a cord, but it should lack stiffness and no disproportions should exist. Enlargement of the lymph gland near the edge of the lesser omentum usually indicates an inflammatory process.

Elaboration of the microscopic pathology is hardly necessary. The findings of Mentzer and others indicate the large percentage of gall-bladders having low grade inflammatory changes. That there are not more persons afflicted with gall-bladder trouble is probably due to the same reason that those with gall-stones have little or no trouble for so long a time or even not at all. Impairment of function need not always accompany pathological findings in the gall-bladder mechanism. If the lumen of the duct is large enough, nothing will happen in the same manner as freely movable and moderately large stone or stones in the gall-bladder may never cause symptoms.

I do not wish, in this paper, to enter the controversy of cholecystectomy *versus* cholecystostomy, nor to advocate the wholesale slaughter of gall-bladders. I am of the opinion, however, that once a patient has had gall-bladder symptoms and attacks, he will never become wholly free of them until the gall-bladder is removed. The attack means that impairment of function has occurred. The processes of inflammation invariably leave a trail, and should one be left in such a closely confined and small mechanism as the cystic duct, it hardly can ever resume its normal function. The gall-bladder then is cut off from its point and source of usefulness and, instead of being an adjunct to the biliary apparatus, it is merely adjacent to it and a constant menace not only to the biliary and digestive mechanism but, because of its increased susceptibility to becoming diseased, to the patient as well.

105 *North Sycamore Street.*

A BRIEF SUMMARY OF FINDINGS ON INTRAVENOUS MEDICATION BY DYES.*

By M. C. NEWTON, M. D., Narrows, Va.

It is not my intention to more than briefly bring together some of the opinions of a few of our worthy colleagues regarding the usage of the two main dyes, mercurochrome and gentian violet, in intravenous medication in the treatment of localized and general infections.

Both dyes are known to penetrate the tissues with which they come in contact, especially mucous membrane and fresh wounds, to a greater degree than antiseptics which have been in common usage for years. Also, in non-toxic concentration they do no tissue damage. It has long been the desire of our profession and others to see a disinfecting agent which would safely combat blood stream and spinal fluid infections and yet not destroy tissue. No such agent has yet come into uncriticized usage.

Dr. Hugh H. Young and Dr. J. H. Hill found that mercurochrome 220 soluble and gentian violet can be introduced intravenously in doses of 5 mgm. per kg. of body weight in rabbits and 10 mgm. per kg. in dogs with impunity. Urine became bactericidal in 10 mgm. per kg. in rabbits and strongly bacteriostatic for B. Coli. It was also determined that the elimination of both dyes was through the kidneys With dosage above the amounts

*Read before the Southwestern Virginia Medical Society, at Wytheville, Va., September 27-28, 1928.

given in the preceding sentence, there is diarrhea and intestinal elimination. Direct action of mercurochrome is rapid. It is strongest during the first hour in the circulation, and in the urine for the first five hours.

In an article in *J. A. M. A.*, March 1, 1924, Dr. Young reported remarkable success against gram positive staphylococci.

In *Johns Hopkins Hospital Bulletin*, January, 1924, Dr. Young reported a cure of a retroperitoneal and perinephritic abscess by intravenous injection of mercurochrome. He noted nausea, sweating and a temperature rise to 106 during the first hour. At end of the fourth day, this temperature was normal and the patient was free from all symptoms.

In the *Journal of Urology*, No. 6, June, 1925, he reports a series of cases:

(a). Four perinephritic cases with intravenous mercurochrome in doses of 2.3 to 5 mgm. per kg., in which all were improved or completely recovered.

(b). Pyelonephritis — twenty-six cases — with very gratifying results; all cases were, with one exception, improved or cured.

(c). Cystitis and prostatic vesiculitis—three cases cured, one showed very little effect of treatment.

(d). Acute gonorrheal urethritis—twenty-six cases. Resumé: "It is apparently proven that gonorrheal urethritis may sometimes be rapidly sterilized and all symptoms of disease may disappear after several intravenous injections of mercurochrome 220, but that doses of 4 and 5 mgm. per kg. body weight should be employed to secure results. With smaller doses reactions may be evident, but the patient may not be cured. In many cases the treatment failed.

Gonorrheal arthritis—twelve cases, acute and chronic. Each case improved or cured.

Chronic chancroidal ulceration—four cases —each early benefited and cured.

The same author also reported cases ranging from cystitis to endocarditis, broncho- and septic pneumonia, with a reduction of mortality.

On March 21, 1925, in *J. A. M. A.*, Drs. I. C. Brill and H. B. Myers, of Portland, Ore., reported three cases of bacteremia and two cases of local gonorrheal infection treated intravenously with mercurochrome and gentian violet, in which the treatment interfered in no way with the progress of the disease.

Hill and Birdgood injected rabbits intravenously with mercurochrome and noted the effect on the kidneys. As high as 7.5 mgm. per kg. of body weight showed no destruction of tubular epithelium. However, 10 mgm. per kg. showed definite renal damage.

In June, 1924, W. A. Whitman reported remarkable results from intravenous injections of mercurochrome in ten cases of chronic and subacute gonorrhea.

In August, 1924, Young and Birkhaug reported cures in two cases of scarlet fever, complicated with erysipelas and streptococcic septicemia, treated with intravenous mercurochrome.

The VIRGINIA MEDICAL MONTHLY, in June, 1926, carried a reprint by J. S. Horsley, Jr., M. D., Richmond, Va., which summarized his cases as follows:

1. In doses varying from 3 to 7 mgm. per kg. body weight, properly prepared ½ to 1 per cent aqueous solutions of gentian violet were given intravenously fifty-one times to thirty-eight patients with decided improvements to twenty-one and only three reactions. He showed that gram positive staphylococci were killed by the dye.

2. In doses varying from 3 to 5 mgm. per kg. body weight, freshly prepared 1 per cent aqueous mercurochrome was used with subsequent improvement in only four cases of sepsis out of twelve treated. Sepsis caused by gram negative organisms of the colon bacillus group and by the gonococcus showed some improvement in this series of eighteen injections.

3. Doses of less than 3 mgm. per kg. of body weight with either of the two dyes were of little, if any, value. Often several injections at intervals of one or several days were necessary to obtain the full therapeutic effect.

4. The mode of action of these intravenous dyes is complex and as yet unexplained. Similar results followed the increasing intramuscular injections of milk at repeated intervals, and may occur after powerful reactions caused by other intravenous preparations.

Deviating from dyes, I may add that the manufacturers of hexylresorcinol S. T. 37 inform me that it becomes inert upon intravenous injection.

While mercurochrome 220 soluble and gentian violet in aqueous solutions are not proven curative agents in intravenous therapy against infections, yet there is ample reason to believe

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they are not without merit, and many well known authorities are convinced of their worth. There are no contraindications of note to their usage, and probably future work, will substantiate the claims of the earlier investigators.

My personal experience in the usage of these dyes is limited, but I feel that they are well worth using. I do not feel like one of my teachers, well known to most of you, that the chief merit of mercurochrome lies in its beautiful red color.

Medical News of the Past

FORTY-FOUR YEARS AGO

During the first year after its organization —1885—the Virginia State Board of Medical Examiners awarded certificates to thirty-six physicians to practice medicine in this State. Twenty of these were given as follows, after the April examinations:

Dr. Robt. Randolph Ball, Casanova, Va.
Dr. S. W. D. Brewer, Harrisonburg, Va.
Dr. Frank Camm, Lynchburg, Va.
Dr. Geo. W. Cocke, Berger Station, Va.
Dr. J. G. Davis, West Point, Va.
Dr. James G. Field, Jr., Gordonsville, Va.
Dr. Andrew C. Fisher, Richmond, Va.
Dr. R. H. Garthright, Elko, Va.
Dr. H. H. Irwin, Woodstock, Va.
Dr. W. J. Kendall, Paris, Va.
Dr. J. W. Kite, Liberty Mills, Va.
Dr. D. A. Kuyk, Atlee, Va.
Dr. A. L. Leftwich, Richmond, Va.
Dr. W. A. McKinney, Lynchburg, Va.
Dr. F. M. Nichols, Snickersville, Va.
Dr. Robt. G. O'Hara, Charlemont, Va.
Dr. W. A. Plecker, Staunton, Va.
Dr. E. A. Terrell, Beaver Dam, Va.
Dr. K. H. Trimble, Monterey, Va.
Dr. W. L. Williams, Marysville, Va.

At later examinations held during the year, the following were licensed:

Dr. John W. Bolen, Fancy Gap, Va.
Dr. O. S. Burns, Lebanon, Va.
Dr. W. W. Buck, Rural Retreat, Va.
Dr. J. T. B. Hyslop, Pungoteague, Va.
Dr. A. T. Keen, Sago, Va.
Dr. J. C. Meredith, Nokesville, Va.
Dr. E. M. Magruder, Charlottesville, Va.
Dr. H. W. McElwee, Low Moor, Va.
Dr. W. H. F. Miller, Richmond, Va.
Dr. Thomas M. Norton, Alexandria, Va.
Dr. W. S. Robertson, Jr., Pleasant Gap, Va.
Dr. P. S. Roy, Fredericksburg, Va.
Dr. S. S. Simpson, Aldie, Va.
Dr. George A. Taber, Richmond, Va.
Dr. E. F. Truitt, (?), later of Norfolk, Va.
Dr. Edwin P. Turner, Fergusson's Wharf, Va.

Of the above named men, seven are now members of the Medical Society of Virginia, residing at the places listed with their names: Dr. John G. Davis, Roanoke; Dr. R. H. Garthright, Vinton; Dr. W. A. Plecker, Richmond; Dr. E. A. Terrell, Fredericks Hall; Dr. W. L. Williams, Brookneal; Dr. J. W. Bolen, Galax; and Dr. W. H. F. Miller, Clifton Forge.

Proceedings of Societies

Child Welfare Committee, Medical Society of Virginia.

MINUTES OF THE FIRST MEETING OF THE CHILD-WELFARE COMMITTEE.

The meeting of the Child Welfare Committee of the Medical Society of Virginia was called to order by the Chairman, Dr. W. P. Jackson, of Roanoke, at 2:00 o'clock, Sunday afternoon, April 21, 1929, in the office of the State Department of Health. Those present were Dr. A. T. Finch, of Chase City; Dr. Percy Harris, of Scottsville; Dr. R. T. Hawks, of Carson; Dr. J. Bolling Jones, of Petersburg, President of the Medical Society of Virginia, and Dr. M. E. Brydon, of the State Department of Health. Dr. J. H. Hiden, of Pungoteague, was unable to attend the meeting.

The Child Welfare Committee of the Medical Society of Virginia was appointed in October, 1928, by the President of the Society. In November, 1928, the Division Superintendents' Association requested this Committee to study the best means of preventing or correcting the bodily defects of school children, with the aim of sending physically fit children to them to teach, reaching at least the present Five Point minimum standard adopted by the State Department of Health and the State Department of Education. The Committee held its first meeting on April 21, 1929, to begin studying this work.

Dr. Brydon briefly outlined to the Committee the methods and results in child health carried out and accomplished by the State Department of Health. She also presented the old and new plans adopted by the Health Department for getting pre-school children physically ready for school.

The first point of the new plan, what fee should be charged, was discussed by the members of the Committee and the following resolution was adopted:

I. "Resolved, that the members of the Child Welfare Committee of the Medical Society of Virginia recommend that in the pre-school child health examinations, the fee be the regular office fee. We make this recommendation because the State Department of Health and the State Department of Education are both directing their efforts to send these

children to the family physicians for these pre-school child health examinations."

The next point of the new plan, what should be a standard for an examination, was taken up. After much discussion a resolution was adopted as follows:

II. "We, the Child Welfare Committee of the Medical Society of Virginia, recommend the following standard for examination of the pre-school children that are sent to the physician's office:

1. Good nutrition.
   a. Not more than 10 per cent below or 20 per cent above average weight for height and age.
   b. Firm musculature and subcutaneous tissue.
   c. Hemoglobin not below 75 per cent (Talquist scale).
2. Eyes: 20/20 vision with no symptoms of eye strain—or corrected to 20/20 vision with glasses if necessary, and with no organic lesion which impairs function.
3. Accurate hearing, with no malformation or chronic disease. (Ordinary conversational voice 20 feet).
4. Free nasal passages, absence of mouth breathing. (No adenoids).
5. Healthy throat—if tonsils are infected or are the causes of other defects, they should be removed.
6. Teeth reasonably clean, no exposed roots or unfilled cavities. (Preferably checked by dentist).
7. No glandular disturbance, such as tuberculous adenitis, hypertrophied thyroid, etc.
8. Fully compensating heart (rule out by exercise if suspicious), with no organic lesion.
9. No disease of the lungs; tuberculosis, bronchitis, asthma, etc.
10. No abdominal defect, as hernia, palpable spleen or enlarged liver.
11. No intestinal infestation, as parasites. (If suspicious send specimen of stool to the State Laboratory.)
12. No major orthopedic defects, erect posture. (All minor orthopedic defects corrected, as flat foot, postural curvatures, etc.)
13. Skin and scalp free from parasitic and other infections or serious conditions. (If suspicious have specimen of blood sent to State Laboratory for Wassermann test.)
14. Absence of organic or functional nervous disease.
15. Protection against smallpox, diphtheria, typhoid and para-typhoid."

The question of what should be a *minimum* standard of physical fitness was brought to the attention of the Committee. The present Five Point minimum standard for physical fitness used by the State Department of Health and the State Department of Education was brought up for discussion as a minimum standard. It was found to cover the desired minimum standard which is as follows: Vision, child reads line marked 20 on the Snellen eye testing chart at a distance of 20 feet (each eye tested separately), or has glasses which supply an equivalent degree of vision; Hearing, child hears conversational voice at a distance of 20 feet (each ear tested separately); Teeth, reasonably clean, no exposed roots or unfilled cavities (preferably checked by dentist); throat, child has no symptoms of trouble with tonsils and adenoids; not a mouth-breather (preferably checked by physician); Weight, child is not 10 per cent or more underweight, or not 20 per cent or more overweight. The following resolution was adopted:

III. "Resolved, that the Child Welfare Committee of the Medical Society of Virginia adopt for use by the physicians of the State of Virginia the Five Point standard as recommended by the State Department of Health and State Department of Education as a minimum standard of physical fitness for the pre-school child."

The Committee decided that a resolution should be made and a copy sent to the Division Superintendents' Association in response to their request that this Committee study the pre-school health work. The following resolution was adopted:

IV. "Resolved, that we appreciate the work done by the Division Superintendents' Association of Virginia and their marked interest in the health of the children of the State of Virginia, as evidenced by their resolution. We heartily endorse the same and desire to state that the physicians of the State of Virginia are not only interested in her children, but are also willing and ready to do what they can for the advancement and furtherance of the above plans for securing healthy children."

The next point in regard to this new plan for getting the pre-school children physically ready to enter school was how to handle this question, in view of the fact that in certain localities there are few physicians, with a large number of very poor school children. After many suggestions and much consideration, the members of the Committee passed the following resolution:

V. "Resolved, that we recommend to the Medical Society of Virginia, to the Association of Division Superintendents, to the Association of Teachers of the State of Virginia, and to the Parent-Teachers Associations, that in certain localities where the physicians are limited and there are large numbers of poor school children unable to pay any fee for examination in pre-school child health work, these children, with their parents, be gathered together in groups in the physician's office or wherever he shall determine, and clinics be arranged in cooperation with the local physicians in nearby counties or districts to render the necessary assistance, and in case this cannot be done adequately, that the State Department of Health in Richmond be called upon for assistance in this work."

There was a discussion about discontinuing the old plan of the State Department of Health for getting pre-school children physically ready for school. The Committee believed that the old plan should be discarded as rapidly as possible and that the new plan as outlined by the State Department of Health be substituted as rapidly as possible, so the Committee adopted the following resolution:

VI. "Resolved, That the Child Welfare Committee recommend that the old plan of the State Health Department be discarded as rapidly as possible and that the new plan adopted by the State Department of Health be substituted, as modified and approved by the Child Welfare Committee, a copy of which is herewith attached."

A motion was made and seconded that the following request be sent to the Committee on Post-Graduate Instruction of the Medical Society of Virginia.

VII. "We, the members of the Child Welfare Committee, would like for you to take into consideration the advisability of an endeavor to arrange, in conjunction with the various medical organizations of the State, or such other agencies as may seem best, demonstration clinics touching the better plan of ex-

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amination of children. The reasons for this request are:

1. The very high percentage of both pre-school and school children who are physically unfit to take the proper advantage of the educational opportunities offered them.

2. The strenuous effort that is now being made by the State Department of Health to get these little patients into the rightful hands, the family physicians.

3. The imporance of periodic health examinations of children through their school life has only recently been recognized generally, for which reason many of us have not had the advantage of such training as would seem most helpful in making these examinations.

In the event it can be arranged, it would seem to our Committee that it is desirable that these clinics be not entirely confined to the centers of population but made to embrace all portions of the State, especially through the county medical societies."

Dr. Brydon then asked the members of the Committee what they would like the State Department of Health to do in regard to this pre-school work. The Committee discussed the matter and adopted the following resolution as to the work that the State Department of Health should now do concerning this work:

VIII. "Resolved by this Committee, That we request the State Department of Health to continue its work in child welfare in accordance with the new plan as adopted by this Committee on April 21, 1929, and that they make such reports to us as will enable us to further perfect the plan."

A motion was made and carried that Dr. Brydon make a report of the transactions of this meeting and send a copy to each member of the Committee.

The meeting adjourned at 6:00 P. M.

Woman's Auxiliary, to the Medical Society of Va.

Annual National Meeting.

The Annual Meeting of the Woman's Auxiliary to the American Medical Association will be held in Portland, Oregon, July 8th-12th. The Executive Board will meet Monday the 8th, a general meeting relating to Public Health of two and a half hours' duration will take place on Tuesday the 9th. The general meeting for the hearing of reports, election of officers and other business, as well as addresses from members of the American Medical Association, will be held on Wednesday the 10th, and the final Board meeting on Thursday. It is hoped that many Virginia women will attend this meeting, and that all of them, whether members of the Auxiliary or not, will register.

I wish to remind the county members that at the meeting last October the Medical Society of Virginia appointed an Advisory Committee of three of their members to help the Auxiliary chairmen. When in doubt as to the proper course to take in any matter these gentlemen are at your service. The Committee consists of Dr. Bolling Jones, Petersburg; Dr. J. Allison Hodges, Richmond, and Dr. Southgate Leigh, Norfolk.

A letter has gone to all county Presidents asking them to send in their reports and a list of their paid up members so we may make a good showing in Portland. We need some more paid up members to show growth since last year

MRS. F. W. UPSHUR,
State President.

Below are some letters from prominent members of the American Medical Association that appeared in the *Missouri Bulletin*. These should be an incentive to all our women to organize, so please read them.

MESSAGE FROM THE PRESIDENT-ELECT.
AMERICAN MEDICAL ASSOCIATION

Chicago, August 21, 1928.

It is with great pleasure that I extend the appreciation of the American Medical Association for the excellent work of the Women's Auxiliary to the Missouri State Medical Association. The efficiency of your organization in aiding in the dissemination of *Hygeia* among the laity of your state deserves special credit as does also the commendable manner in which you have cooperated with the program committee of the Women's Clubs.

MALCOLM L. HARRIS.

MESSAGE FROM THE EDITOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Chicago, October 8, 1928.

I am a believer in the Women's Auxiliary to the American Medical Association, because I know by demonstration what it can accomplish. I have seen its fine work on behalf of *Hygeia*. I have seen its influence in the promotion of attendance at medical meetings. I have seen its share in entertainment and in arranging programs of women's organizations. It has begun to fill a definite place in medical life.

More power to it!

MORRIS FISHBEIN.

MESSAGE FROM THE SURGEON GENERAL U. S. BUREAU OF THE PUBLIC HEALTH SERVICE

Washington, September 10, 1928.

May I extend my congratulations upon the publication of your Fifth Anniversary Year Book and best wishes for continued success!

The cooperation and interest of the Women's Auxiliary in Missouri in the work of the State Board of Health and other public health agencies are of great assistance not only in that state but their sphere of influence extends outside as well. It is indeed a pleasure to have this opportunity to express to the Auxiliary, and to the State Medical Association which it serves, my cordial appreciation of the understanding and support which we have always received from their representatives.

H. S. CUMMING.

The Truth About Medicine

In addition to the articles enumerated in our letter of February 23rd, the following have been accepted:

Haley M-O Co.
Magnesia-Mineral Oil (25)—Haley.
H. K. Mulford Co.
Perfringens Antitoxin—Mulford.
National Drug Co.
Diphtheria Toxin-Antitoxin Mixture.
Parke, Davis & Co.
Tetanus-Perfringens Antitoxin, Refined and Concentrated.
G. D. Searle & Co.
Solution Bismuth Sodium Tartrate—Searle, 1.5 per cent Sulpharsphenamine—Searle.
Sulpharsphenamine—Searle, 0.4 Gm. Ampules.
Sulpharsphenamine—Searle, 0.5 Gm. Ampules.
Sulpharsphenamine—Searle, 0.6 Gm. Ampules.

NEW AND NONOFFICIAL REMEDIES

Lipoiodine-Ciba (New and Nonofficial Remedies, 1928, p. 215).—In the form of Lipoiodine-Ciba, Diagnostic, it is used as a contrast medium in the localization of bronchial and pulmonary lesions, as a diagnostic aid in gynecology and myelography, for detecting urethral strictures, and in cavities where intensification of the roentgen ray shadows is desired. The dosage for diagnostic work is from 5 to 20 c.c. of Lipoiodine-Ciba, Diagnostic, as determined by the extent of the field to be investigated. Ciba Co., Inc., New York.

Lipoiodine-Ciba Diagnostic.—A 60 per cent solution of Lipoiodine-Ciba (New and Nonofficial Remedies, 1928, p. 215) in sesame oil. Ciba Co., Inc, New York.

Ampules Lipoiodine-Ciba Diagnostic, 5 c.c.—Each ampoule contains 5 c.c. of a 60 per cent solution of Lipoiodine-Ciba (New and Nonofficial Remedies, 1928, p. 215) in sesame oil. Ciba Co., Inc., New York.

Acidophilus Bacillus Liquid—Mulford.—A whey culture of *B. acidophilus* (Moro) in a whey medium, which contains 50 million viable organisms per c.c. at the time of sale. For a discussion of the actions and uses of bacillus acidophilus preparations see Lactic Acid Producing Organisms and Preparations, New and Nonofficial Remedies, 1928, p. 228. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., March 2, 1929, p. 723).

Dial-Ciba.—Diallylbarbituric acid.—Dial-Ciba differs from barbital (diethylbarbituric acid) in that both of the ethyl groups of the latter are replaced by allyl groups. The actions and uses of Dial-Ciba are essentially similar to those of barbital, but Dial-Ciba is more active than barbital and it is used in correspondingly smaller doses. Fractional doses are used as a sedative and larger doses as a hypnotic. The hypnotic action is induced within one-half to one hour. As a sedative the dosage is 0.02 to 0.04 Gm. two or three times daily; as a hypnotic 0.1 to 0.3 Gm. one-half to one hour before sleep is desired. The product is supplied in powder, in Tablets Dial-Ciba, 0.1 Gm. and as Elixir Dial-Ciba containing 0.05 Gm. per 4 c.c. Ciba Co., Inc., New York. (Jour. A. M. A., March 23, 1929, p. 983).

PROPAGANDA FOR REFORM

COUNCIL PASSED.—Notification is being sent to the medical profession that the well known Haley's M-O, Magnesia Oil has been accepted for N. N. R. of the American Medical Association. Henceforth the product will be known as Magnesia-Mineral Oil (25) Haley. It was certainly a happy thought to combine Liquid Petrolatum and Milk of Magnesia in the form of a permanent uniform, unflavored emulsion. The taste is not at all unpleasant and the absence of any distinct flavor prevents the habitual user from growing tired of it.

The value of mineral oil as a lubricant and emollient for the treatment of certain forms of obstipation has been well established. In many cases, however there is added to the need for lubrication the indication for the use of a mild laxative and ant-acid for which purpose years of clinical use have demonstrated Milk of Magnesia to be ideal.

Practically, there exists in many cases of intestinal stasis and constipation a hyperacid condition which calls for the use of an antacid.

Magnesia-Mineral Oil (25) Haley has therefore a therapeutic field considerably broader and more diversified than is the case with either one of its ingredients considered singly.

The makers of this product, were prompt to realize this but were also well aware that skepticism or doubt is apt to be aroused when the number of indications for the product is large.

As evidence of good faith and entirely in the interests of the medical profession, numerous questionnaires have been sent out from time to time, giving the physician an opportunity to indicate exactly under what conditions his use of Magnesia-Mineral Oil (25) Haley proved most satisfactory. Response to these questionnaires has been prompt and numerous.

Tabulations have been carefully made of the replies received from physicians and only those indications mentioned in the literature which proved to have been common to a large number of doctors. In this way it is believed, undue claims have been avoided and the doctors have been given reliable information based upon actual clinical use.

The same method has been employed in the case of the dental profession, because dentists have been prompt to recognize the value of Magnesia-Mineral Oil (25) Haley as an antacid mouth wash. The advertising of this product has been kept within strictly ethical limits.

Radio Broadcasting of Medical Advertising.—The promoters who travel the borderland between honesty and quackery, raking in the shekels of the unwary, have found in radio broadcasting a glorious

accessory for their manipulations. The mutterings of mystics from India and of fortune tellers from France, the claim for hair growers from Austria, for magic horse collars, for radium drinking waters, for antiseptics, cosmetics, influenza and cancer cures, the sexual appeals of rejuvenationists, the mouthings of evangelistic and faith healers, and preposterous dietary schemes come pouring from the loud speakers. At a conference held in Chicago by representatives of the broadcasting stations, the Better Business Bureau and the American Medical Association, the following resolution was offered: Station directors should keep alive to the fact that all broadcasting is listened to by all members of the family circle and that nothing should be broadcast that is in poor taste, embarrassing or offensive when heard by all members of the family. The combined action of the radio broadcasting industry and the Better Business Bureaus of the nation should lead promptly to control, indeed, to actual sanitation, of medical radio advertising. (Jour. A. M. A., February 9, 1929, p. 475).

An Anesthetic Accident.—Recently at Evansville, Ind., a tank of nitrous oxide exploded, killing an anesthetist, maiming his attendant, and wrecking several rooms. There was no tank containing ethylene in the room. The nitrous oxide tank was not attached to the machine. It has been *assumed* that the nitrous oxide tank contained some ethylene. This presumably gained access to the nitrous oxide cylinder when, at some previous time, the tank had been suspended from the yoke of an old time anesthetic machine, so constructed that a mixture of the two gases would occur if the valves were left open. The accident occurred probably as a result of a mixture in the tank of these two gases, notwithstanding the ample warning given years ago regarding the use of ethylene. (Jour. A. M. A., February 9, 1929, p. 476).

Lesser Slim Figure Bath.—During the past few months there has been put on the market a preparation sold under the name of "Lesser Slim Figure Bath," which is described as "The Sensation of Europe" that, by its "mysterious action," will reduce the weight of the fat "regardless of your diet." It comes from Berlin—if one is to believe the advertising—and is the invention of Herr Felix Lesser, who, it is claimed, submitted "his remarkable discovery" to "the eminent Dr. G. Braun, of Berlin." The eminent doctor's report is part of the Lesser Slim Figure Bath advertising. An American company has been formed—the Lesser Co., incorporated under the laws of Illinois, with John J. Mitchell, a prominent Chicago banker, as treasurer. The Chicago *Tribune* has advertised the preparation, although its health editor informed a correspondent that he knew of no substance used in baths which will reduce weight. The Lesser Slim Figure Bath comes in the form of a package of white, highly scented effervescing powder, in which there is a large compressed tablet that also effervesces. The instructions are to fill the bath tub with hot water, empty the contents of the package into the tub and stir well, get into the tub and place the tablet "under your back." From its analysis, the A. M. A. Chemical Laboratory concludes that a product having essentially the same properties as the bath powder, may be prepared by using: corn starch, 7 parts; borax, 1 part; baking soda, 1 part; tartaric acid, 1 part; strongly odoriferous perfume. The Laboratory found from its analysis that a tablet having essentially the same composition as that of the Lesser tablet may be prepared by using: baking soda, 1 part; table salt, 6 parts; tartaric acid, 3 parts; talc, as binder. Every physician knows that this absurd mixture cannot have the slightest effect in the reduction of weight. (Jour. A. M. A., February 9, 1929, p. 492).

Heparmone for Eclamptic Conditions.—The Council on Pharmacy and Chemistry publishes a preliminary report on the use of Heparmone in eclamptic conditions. Heparmone is the name applied by Eli Lilly & Co., to an acid alcohol extract of liver. The firm presented details of manufacture of the product and method for its standardization. The preparation has been used experimentally in studies of hypertension, but the firm restricts its recommendations at this time to the use of Heparmone in eclamptic conditions and did not ask for consideration of the experimental work in hypertension. Drs. Miller and Martinez, from the Department of Obstetrics, University of Pittsburgh School of Medicine, read a paper on their use of Heparmone in preeclamptic conditions and eclampsia before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-ninth Annual Session of the American Medical Association at Minneapolis, June 14, 1928. The Council examined the evidence presented in this paper and concluded that Heparmone is not acceptable for New and Nonofficial Remedies, because there is insufficient evidence at hand concerning its therapeutic value. Since the product is not being marketed, the Council postponed action to await further evidence and published its preliminary report. The Council holds that the product should not be recommended to the general profession until its value or promise has been demonstrated by further clinical trial in obstetric clinics where there are men trained in the experimental method of medicine. (Jour. A. M. A., February 23, 1929, p. 649).

Ethylhydrocupreine Base in Pneumonia.—Ethylhydrocupreine, introduced as optochin, appears to be a specific agent against the pneumococcus. It is, however, so much less efficient against other microorganisms that, in an influenzal pneumonia due to any other organism than the pneumococcus, ethylhydrocupreine would not be of any use. Even in pneumococcus infection, one could hardly call ethylhydrocupreine an ideal remedy. To have any effect it must be given in the largest dose tolerated and at the earliest possible moment. Its worst feature is its tendency to produce optic neuritis. To prevent this, the technic has been elaborated of giving ethylhydrocupreine base with milk. (Jour. A. M. A., February 23, 1929, p. 673).

Book Announcements

Youthful Old Age: How to Keep Young. By WALTER M. GALLICHAN. With an Introduction by THURMAN B. RICE, M. D., Associate Professor of Bacteriology and Public Health, Indiana University School of Medicine; Author of "Conquest of Disease" and "Racial Hygiene." New York. The Macmillan Company. 1929. 236 pages. Cloth. Price $2.50.

Report on Fourth International Congress of Military Medicine and Pharmacy. Warsaw, Poland, May-June, 1927. By COMMANDER WILLIAM SEAMAN BAINBRIDGE, M. C. F., U. S. Naval Reserve, Member of Permanent Committee, Delegate from the United States. The Collegiate Press. George Banta Publishing Company. Menasha, Wisconsin. 248 pages. Cloth.

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Editorial

Blood Examinations in Diagnosis.

Hematology today presents an ever increasing range of interest. Problems of clinical medicine and practical surgery are closely related to blood values; to blood morphology; to blood diagnosis. The histology and pathology of the blood are wrapped up in the many practical questions of diagnosis and treatment. With the active work of recent years in pernicious anemia alone, one may find illustrative material in emphasizing this relationship.

Giffin* recently presented comments upon inferences that may be drawn from the blood count and from the morphology of the blood cells, which bears out the importance of a close scrutiny of the blood by clinicians. Several case reports were given by Giffin to serve as material for the comments. Summarizing, he notes, that high color index is valuable in the diagnosis of pernicious anemia and hemolytic icterus; that persistent leukopenia directs attention to the probable diagnosis of aplastic anemia and agranulocytosis; that the distribution of cells in the differential count signifies a distinction between hemorrhagic purpura and aplastic anemia; that a high percentage of reticulated cells are indicative of an active blood marrow; that the leucocyte count depends upon three conditions (a) production of cells, (b) destruction of cells, and (c) mobilization of cells in the circulation. Finally, it was stated, that leukopenia may be temporary or permanent; and that severity of the infection, causing redistribution, suppression or permanent injury of bone marrow, enters into the problem of the correct interpretation of blood counts.

*See report of Staff Meeting Mayo Clinic, February 13, 1929.

Agranulocytosis.*

Death in patients with peculiar and noxious mouth symptoms and a low white cell count and preceded by a high range of temperature has emphasized the need for a more popular discussion of a disease entity called agranulocytic angina.

It was Schultz in 1922 who described a group of cases of a nocrotic angina giving a marked granulocytic leukopenia. He gave the condition the name of agranulocytosis.

Hueper has made a discussion of the symptoms, pathology and differential diagnosis in connection with a group of five cases observed by him between November, 1927, and April, 1928.

The author makes the interesting observation that the existence of previous diseases, even of the throat, apparently has no positive causative significance. The onset of the processes of agranulocytosis may accompany a condition showing headaches, fatigue, weakness, or it may appear in a patient previously feeling well. Fever of high type and continuous, associated with rapidity of pulse, malaise, dysphagia and dyspnea, characterize the onset in these patients; and withal a peculiar sore mouth or throat. This feature may not at first emphasize itself, and may appear important only about the third or fourth day. Then may follow herpes labialis, jaundice (50 per cent), diarrhea, increasing weakness and toxicity of the patient. Growing rapidly worse, death may result in seven days; in two days coma followed by death may occur. Remissions may occur but the disease is generally fatal; the record of recoveries up to the time of Hueper's paper was six cases.

Oral examination of these patients reveals enlarged reddened tonsils with white or yellowish plugs on them. These areas turn dirty gray and yellowish, and the removal of these necrotic membranes leaves an ulcerated surface. Gangrenous and blackish material may slough from the diseased tonsils. On the pillars, uvula, palate, base of tongue, pharynx and gums, similar necrosing processes may be found. Besides stomatitis, foul tongue and hemorrhagic areas are present in the mouth. Submaxillary and cervical lymph nodes are both enlarged and tender. Ulcerations similar in nature may be observed in the anal region:

*Hueper, A. I. M., Vol. 42, number 6, page 893.

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the vulva, vagina and uterine cervix in some cases.

Heart, lungs, liver, gall-bladder, spleen and kidneys may become involved in the symptomatology but in no definite or characteristic manner. Bacterial examination of the "throat does not render results of any special significance"; there are, however, usually found staphylococci, streptococci and pneumococci. Fusospirillosis was associated with the disease in only 10 per cent of the cases.

Blood examination gives most definite changes. Leukocytes are decreased in number, from 1,500 to 100 in a cubic millimeter. Granulocytic cells decrease and finally disappear. While immature forms are not found, degenerative forms may be. Lymphocytic cells decrease, while "monocytes are temporarily somewhat increased". Erythrocytes and hemoglobin are unaltered except in minor particulars. Coagulation time is normal. Widal and Wassermann tests are negative. Blood cultures are usually negative being positive in only 10 per cent. In this 10 per cent group, cultures show hemolytic and non-hemolytic streptococci and staphylococci, streptococcus viridans, bacillus pyocyaneus, bacillus acidilactici and bacillus coli.

Agranulocytosis is more frequent in women than men; it appears after middle life most frequently. Germany and Austria seemed to report cases first and most frequently, but the United States and Canada have been reporting cases more recently.

Differential diagnosis may have to be made with several diseases. Influenza and typhoid differ in not disclosing essential agranulocytosis. Septicemia differs in showing hemorraghic diatheses, abscesses, primary foci, immature forms of granulocytes, thrombopenia, secondary anemia, frequently positive blood cultures, etc. Acute Leukopenic Leukemias also show generalized hemorrhagic diatheses, secondary anemia, thrombopenia, etc., and alterations in liver, spleen, lymph nodes, and kidney.

Diseases with mouth symptoms, which may be confused with agranulocytosis, are diphtheria, Vincent's angina and monocytic angina (Schultz). The characteristic downward progress of agranulocytosis, marked by hematologic changes, as above noted, makes for differentiation.

Therapy

Hueper quickly summarizes his experiences in therapy: that diphtheria antitoxin, arsphenamine, mercurochrome—220 soluble, an organic iodine compound, alcohol, various silver compounds, acridine dyes and many local caustics and disinfectants have been used without favorable effect.

Repeated transfusions of large amounts of blood gave temporary improvement. Recovery, after administration of polyvalent antistreptoccus serum and Roentgen ray irradiation of the long bones with stimulating doses, was noted.

(Read: Also Rose and Houser, Archives of Internal Medicine, April, 1929.—Editor).

Figures on Surgical Operations of Duodenum and Stomach.

Balfour's presentation of experiences of the Mayo Clinic* in surgical procedures upon the stomach and duodenum during the year 1928 offers the reader an interesting summary of their success in this field of surgery. Nowhere in this country is there opportunity presented to observe a larger number of operations for lesions of the stomach and duodenum in one year's time than in the Mayo Clinic. In 1928, there were 1,891 operations on the stomach and duodenum; over six operations a day for 300 days. The mortality rate for the series, including malignant and non-malignant lesions, was 2.74 per cent. This is apparently a remarkably low mortality rate and can be explained upon the basis of skill in operation, "careful selection of patients for operation, and to the efficient pre-operative and post-operative care". In the case of duodenal ulcer, it is interesting to note that Balfour points to the conservative attitude of the Clinic toward duodenal ulcer. For during 1928 there were diagnosed at the Clinic by Roentgen ray 2,261 duodenal ulcers but only 803 were operated upon. He adds, "there is no disposition as yet to depart from the conservative attitude both in selection of patients and the type of operation". In an operative experience for duodenal ulcer in 803 cases the mortality rate was only 1.12 per cent.

For gastric ulcer, there were 133 patients operated upon in the Clinic in 1928 and there

*Staff Proceedings Mayo Clinic, February 20, 1929.

was a mortality rate of 4.5 per cent. For carcimona of the stomach during the last year, 280 patients were operated upon and there was a mortality rate in this series of cases of 8.2 per cent.

Brief Treatise on the Diagnosis and Treatment of Pulmonary Tuberculosis.

The State Department of Health has issued a booklet by the above title. The author, Dr. W. E. Brown, Superintendent of the Blue Ridge Sanatorium, Charlottesville, is to be congratulated upon this practical and useful treatise. The subject is well considered and the text matter is clearly expressed. The book of thirty-seven pages presents the disease in simple but scientific manner and brings within its scope a treasure of useful information. Every practitioner of medicine in Virginia may well devote a few hours to its perusal for in this way a disease of greatest human interest may be easily reviewed. The author's familiarity with the problems of diagnosis of tuberculosis and its treatment are evidenced in its pages and many common sense observations and scientific truths are expressed therein.

It is hoped that the State Department of Health may send this monograph to every member of the Medical Society of Virginia, as well as to all licensed practitioners in the State.

We take pleasure in bespeaking for it a thoughtful reading because we feel that such time will be profitably spent.

News Notes

Our Charlottesville Meeting.

Our members will be interested in knowing that the local committee in charge of our Charlottesville meeting, October 22-24, have selected Cabell Hall at the University of Virginia as the place of meeting. Plenty of room is available in this building for all scientific and business meetings and commercial and scientific exhibits. Special arrangements will be made to handle automobile traffic and the hall is quite convenient to the cafeteria of the University where lunch and supper may be obtained reasonably.

Dr. L. T. Royster is general chairman from the Albemarle County Medical Society and Dr. W. H. Goodwin is chairman of the University Committee for the celebration incident to the opening of the new Medical School Buildings. This committee has aranged to have several noted and excellent speakers for their exercises.

Mrs. H. B. Mulholland has been selected as the chairman of the Woman's Committee and will name the members of her committee soon.

The Mid-Tidewater Medical Society

Met at Mathews C. H., on April the 24th. In the absence of the president, Dr. Hawes Campbell, Dr. R. R. Hoskins, vice-president of Mathews, presided. Dr. M. H. Harris, of West Point, was at the secretary's desk. After an enjoyable luncheon at the tea room, the Society was welcomed by Hon. Rufus Manning, a former citizen of Mathews but now a resident of Pittsburgh. The business meeting followed at the court house. Several matters of importance were discussed at length, and several new members admitted. This meeting was the best attended and most enthusiastic that the Society has held and it is hoped there may be many more like it. There were twenty-one doctors in attendance including Drs. Amory, Carleton, Martin and Poindexter, of Newport News, Va.

The next meeting will be held at Saluda on July the 24th, at which time papers on ileocolitis and pyelitis will be read and discussed.

The Post-Graduate Medical Society of Southern Virginia

Held its last meeting at Emporia, April the 9th, with Dr. M. H. Tredway, of Emporia, president, in the chair. Dr. F. N. Mallory, of Lawrenceville, is vice-president, and Dr. Philip Jacobson, Petersburg, secretary-treasurer. Several interesting papers were read and dinner was served following the program. It was decided to hold the May meeting in Blackstone.

The South Piedmont Medical Society

Held its regular semi-annual meeting in Danville, Va., April the 16th, under the presidency of Dr. William R. Martin, of Charlotte C. H. A number of interesting papers were presented and between the afternoon and evening sessions, supper was served at the Burton Hotel. The following are the officers elected for the ensuing year: President, Dr. I. Keith Briggs, South Boston; vice-presidents, Dr. Harry Pritchett, Danville; Dr. John W. Carroll, Lynchburg; Dr. C. W. Tucker, Drakes Branch; Dr. H. H. Hurt, South Boston; sec-

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retary-treasurer, Dr. George A. Stover (re-elected), South Boston. It was voted to hold the next meeting in South Boston.

Is Your Local Society Active?

This is a question which officers and members of all local medical societies in the State might well be asking at this time. If not, we urge that you arrange to have meetings, get re-organized, and select your quota of delegates for our meeting to be held in Charlottesville, October 22nd, 23rd and 24th. This is to be a fine meeting, as every one is always interested in the University and everything connected with it. When your Society has the representation in the House of Delegates to which it is entitled, each member is in position to keep in touch with the organization's work through your spokesmen. Be sure that your delegates are elected and select those who plan to attend the meeting.

Dr. Leta J. White,

For the past four years assistant medical inspector for the Richmond City Health Department, tendered her resignation, effective April the 1st, that she might take a course of study and service in the Children's Hospital of Philadelphia. She will remain there for about a year. Dr. White graduated from the Medical College of Virginia in 1924 and served as an interne in Memorial Hospital, Richmond, taking the full course including ambulance service. She is the first woman physician to have been employed by the City of Richmond and, while with the department, was assigned to the inspection of contagious diseases and epidemiology.

Dr. Emily Gardner,

Formerly with the State Heatlh Department with headquarters in Richmond, Va., after a service at the Willard Parker Hospital, New York City, has been given a residency of several months at the Kingston Avenue Hospital, Brooklyn, N. Y.

Correction.

In announcing promotion recently given Dr. Raymond A. Vonderlehr, in our April issue, we failed to name the Service with which he is connected. The notice should have stated that he had been promoted and commissioned in the grade of Passed Assistant Surgeon in the Regular Corps of the Public Health Service. Dr. Vonderlehr is now stationed in Dublin, Irish Free State.

Dr. P. K. Graybill,

Who, with his family, has spent the past several years in Arizona, announces that they will return to Virginia about June the 1st for the summer. They will have headquarters at their former home, Fincastle, Va.

The Hoffmann-LaRoche Chemical Works

Have secured a tract of land at Nutley, N. J., twelve miles from New York City and are there erecting their new laboratories. Ground was broken with appropriate ceremonies last November and the construction work has been pushed with such vigor that it is hoped the Company will be able to move from their present quarters, 19 Cliff Street, New York City to New Jersey early in May. Dr. Emil Barell, Director of the Hoffmann-LaRoche activities in Europe was present at the November ceremonies and turned the first shovel full of earth. Mr. Elmer H. Bobst, General Manager of the Company, made an address full of hope and faith in the growth and success of the Roche organization.

This Company manufactures a large number of Council-accepted products that are advertised in the official State Medical Journals and readers of this Journal will naturally be interested to know of the new developments which make it possible for the Hoffmann-La-Roche Company to greatly increase their production.

Information Wanted.

The Committee of the Medical Society of Virginia on the History of Medicine in Virginia would like to find examples of indenture contracts of early Virginia doctors. The practice of learning medicine by serving an apprenticeship to an established physician was once common in this country and, also, young men immigrating to this country often paid their passage by signing indenture papers.

Please communicate any information you may have about such papers to the Society's offices, 104½ West Grace Street, Richmond, Va., or to the chairman of this committee, Dr. Wyndham B. -Blanton, 828 West Franklin Street, this city.

Japan's "Floating Prison" for Delinquent Boys.

A scrapped Japanese warship—the *Musashi*—has been rebuilt to serve as a "floating prison" for boy delinquents, who are to be given a six-month course of instruction in the prac-

tice and theory of navigation, fishing and the making of fishing equipment, weather observation, and kindred subjects while they are on the boat. The announced purpose is to give the boys plenty of work in a healthy sea atmosphere while teaching them a useful occupation. Fifty boys, 14 to 23 years of age, are to be selected for this training from the prisons of the country.

To Meet at Old Point Comfort, Va.

The Chamberlin-Vanderbilt Hotel at Old Point Comfort, Va., has been selected for the annual meeting of the American Pharmaceutical Manufacturers' Association to be held June 3rd-6th.

The meeting this year will take on an international aspect as invitations have been extended to more than twenty-five leading Canadian manufacturers to attend and participate. Representatives of the British Chemical Manufacturers have also been invited.

Discussion of distribution problems will be one of the principal features of the meeting. This discussion will be led by Mr. Frank A. Mallett, of the Standard Chemical Co., of Des Moines, Iowa.

Closely allied to distribution is the work of the publicity committee. Their report will include the results of a survey of the medical profession which has recently been started to improve the service of the association to the profession.

There will be exhibits of medical advertising by some of the members and many practical advertising and publicity problems will be discussed.

The following committees will have charge of the various sections of the program.

ATTENDANCE: Bern B. Grubb, Lafayette Pharmacal Co.
BUSINESS POLICY: J. H. Foy, Maltbie Chemical Co.
CONTACT: C. E. Vanderkleed, Robert McNeil (including report of Research Board).
NATIONAL DRUG TRADE CONFERENCE: Harry Noonan, Drug Products Co.
DISTRIBUTION PROBLEMS: F. A. Mallett, Standard Chemical Co.
LEGISLATIVE: C. D. Smith Pharmacal Co. (including report of Councilor, U. S. Chamber of Commerce).
MEETINGS—*Annual*: H. B. Johnson, Zemmer Co.
MEMBERSHIP: Dr. C. H Searle, G. D. Searle & Co.
MEMORIAL: B. L. Maltbie, Altamonte Springs, Fla.
PRIOR RIGHTS BOARD: R. R. Patch, E. L. Patch Co.
PUBLICITY: F. A. Lawson, E. L. Patch Co.
RESEARCH AWARDS: Dr. A. S. Burdick, Abbott Laboratories.
SALES PROBLEMS: Dr. H. Sheridan Baketel, Reed & Carnrick.
STANDARDIZATION AND SIMPLIFICATION: R. M. Cain, Swan-Myers Co.
STANDARDIZATION OF GLASS CONTAINERS: C. C. Doll, Zemmer Co.
TRADE NAMES: R. R. Patch, E. L. Patch Co.

Speakers of national reputation have been secured for the annual banquet, which will be one of the features of the meeting.

Under the able leadership of Mr. R. Lincoln McNeil who has been president during the past two years, the A. P. M. A. has been very active in all departments of its work. The annual meeting at Old Point Comfort bids fair to be the most successful in the history of the Association.

Dr. Broders to be Honored.

Upon Dr. Albert Compton Broders, pathologist to the Mayo Clinic, the Medical College of Virginia will confer the honorary degree of doctor of science at commencement, May 28th. Doctor Broders is an alumnus of the School of Medicine of the Medical College of Virginia, Richmond.

Lower Death Rates From Certain Diseases in 1928.

Scarlet fever, diphtheria, and whooping cough—three of the four communicable diseases which have exacted the greatest toll of life from children, the other being measles—showed lower death rates in 1928 than ever before among the millions of industrial policyholders of a large life insurance company. A slight increase during the year from measles was more than offset by the lower rates for the three others. The rates for two puerperal diseases which together cause more than one-half the maternal deaths reached new low points during the year among the policyholders.

Dr. and Mrs. Walter J. Adams,

Of Norfolk, Va., left the middle of December last for a tour around the world. A card recently received from India reports that they are having a fine and interesting time seeing the wonders of that and other countries.

Married.

Dr. Horace Taylor Hawkins, Waynesboro, Va., and Miss Avis Curtis Bernard, Richmond, Va., April 22nd.

Dr. E. Claude Jamison, Rocky Mount, Va., and Miss Ella Virginia Marshall, Mica Va., April 27th.

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Portraits Presented to Society.

At the May 6th meeting of the Norfolk County Medical Society, in Norfolk, Va., portraits of the late Dr. Israel Brown and Dr. Edward E. Feild, of that city, were presented that Society. A number of interested friends, in addition to members, were present.

Post-Graduate Course in Ear, Nose and Throat Surgery.

We are informed that there will be a Post-Graduate course in Ear, Nose and Throat Surgery for American Physicians at the University of Bordeaux, France, commencing July 22, 1929. Dr. Leon Felderman, 413 Mitten Building, Philadelphia, Pa., is in charge of registering the American physicians for this course.

Drs. Richmond J. and Regena C. Beck,

Richmond, Va., have moved to 1103 West Franklin Street, this city. Dr. Richmond Beck announces the opening of offices at this address and will limit his practice to neurology and psychiatry.

Turkey Requires Health Certificate Before Marriage.

A recent law of Turkey forbids the issuing of marriage licenses except on presentation by each party of a health certificate signed by a Government physician or a private physician whose signature is registered at the local health department. Certificates issued by private physicians must be sent to the local health authorities for investigation. The law requires that the men shall be given thorough physical examinations, and that the women shall have the hands, throat, and mouth examined. All applicants for licenses must present birth certificates.

Dr. W. J. Rollins,

Of the class of '25, University of Virginia, Department of Medicine, who for the past two years has been resident surgeon at University Hospital, has located in Macon, Ga., for the practice of surgery.

The American Association for the Study of Allergy

Will hold its next annual meeting in Portland, Ore., Monday and Tuesday, July the 8th and 9th, 1929, at the time of the meeting of the American Medical Association. Further information may be obtained from the secretary, Dr. Warren T. Vaughan, Medical Arts Building, Richmond, Va.

Dr. W. W. Insley,

Recently of Christiansburg, Va., moved to Roanoke, Va., the first of this month, and opened offices at Williamson Road and Grace Street, where he will be engaged in general practice.

Dr. and Mrs. Benj. L. Carter's Daughters,

Misses Marjorie Helen and Margaret Ellen, spent the Easter holidays with their parents at their home at Blue Spring Run, Va. The Misses Carter are seniors at State Teachers' College, Farmville, Va.

Dr. Harvey J. Howard,

Director of the Macmillan Research Fund of St. Louis, and of the Department of Ophthalmology in the Medical School of Washington University, has been elected to the Advisory Board of the National Society for the Prevention of Blindness. Dr. Howard is a leading authority on trachoma, with seventeen years' experience in various medical capacities in China where trachoma conditions are probably the worst in the world.

Dr. W. W. Seward,

Surry, Va., was elected president of the Bank of Dendron, Va., at a recent meeting of the stockholders.

Hampden-Sydney—The First Medical School in Virginia.

The recent announcement that Hampden-Sydney is in need has caused considerable interest amongst the medical profession in Virginia. Hampden-Sydney is the second oldest college in the South. It was founded 153 years ago, opening its doors on the first day of January, 1776, and has enjoyed an unbroken record of exceptional service to the Nation and the State. Amongst its charter members were Patrick Henry, James Madison, and Nathaniel Venable, and several members of the First Virginian Conventions.

It is impossible here to enter into any detailed list of the achievements of Hampden-Sydney men. It is enough to say that Hampden-Sydney has given to the nation one President of the United States, ten United States Senators, two cabinet members, twenty-five members of the House of Representatives, and four foreign ministers. Also eleven Hampden-Sydney men have been Governors of states, four of them being Governors of Virginia. As Governor Byrd wrote recently, there were times when every important position in the

State of Virginia from Governor down, was filled by Hampden-Sydney men.

The chief point of interest to the medical profession is that Hampden-Sydney was the first college in the South to have a Medical Department, and this little college, which has never had an enrollment of more than 260 men, has produced over 500 surgeons and physicians.

The opening of the Medical School at Hampden-Sydney came about through a group of doctors in the South. In the early part of the 19th Century, there were several colleges in the South offering degrees in Law, Classics and Theology, but none had a Department of Medicine. This was at a time when the University of Virginia was just commencing its life and the lack of and need for medical instruction in the South was very apparent. It was not until 1838 that the medical profession realized that nearly $18,000,000 had been spent by Virginia alone for medical education in the North. At that time there was no medical school which could offer a degree south of Maryland. Virginia doctors tried to obtain a charter for their own Medical College in the early part of the 19th Century, and their plea was refused. Then they applied to Hampden-Sydney to grant them the use of its charter. The trustees agreed to this request and it was in 1838 that the Medical Department of Hampden-Sydney was started. After a few years, the geographical position of Hampden-Sydney was found to be undesirable for medical work, and the department removed to Richmond and was situated in Richmond from 1847-1853. It is a curious fact that a mile away from Hampden-Sydney College, at Prince Edward Court House, was the Medical Department of Randolph-Macon College. This was founded by Dr. J. P. Mettauer, of the Class of 1807 at Hampden-Sydney.

There were, of course, scores of distinguished men in the medical profession, produced from Hampden-Sydney long before the Medical School was started. In the very first graduating class of 1786, there is the name of George Cabell, whsoe professional life was spent in the city of Lynchburg. Since the medical school was closed, hundreds from later generations have passed from Hampden-Sydney into the medical field. There is no space here to list their distinguished names. Today Hampden-Sydney continues in its curriculum a pre-medical course, stressing the necessity for the four-year period, because "in such an important profession as medicine, a thorough preparation in science, as well as a broad cultural background are so desirable".

After 153 years of splendid service, Hampden-Sydney is facing a crisis. Throughout her history she has lived from hand to mouth, advertising neither her achievements nor her difficulties. She has the lowest endowment funds of any standard college in the United States, either white or colored, only $167,000. She must raise her permanent endowment funds to half a million shortly or cease to rank as a Standard Grade A College. Efforts are now being made to raise $225,000 of new endowment money before the first of July. If that is done, Hampden-Sydney can claim a contingent gift of $100,000 from the General Education Board of America. Some new buildings are also urgently needed but without adequate endowment funds the college cannot continue.

There are about fifty doctors practicing in Virginia who were educated at Hampden-Sydney.

The Headquarters of the Hampden-Sydney Campaign are at the Grace American Building, Richmond.

Doctors Head School Board.

At the annual meeting of the Richmond (Va.) School Board, the latter part of April, Dr. Roshier W. Miller was elected chairman and Dr. Clifton M. Miller vice-chairman.

Dr. B. R. Caldwell,

Of the U. S. Veterans' Bureau, announces his change of address from Washington, D. C., to 120 West Maple Street, Rosemont, Alexandria, Va. He will continue his connection with the Bureau as specialist in tuberculosis on the Advisory Group and will also do consultation work.

Dr. Frederick C. Rinker,

Norfolk, Va., by invitation read a paper at the annual meeting of the Medical Society of the District of Columbia held in Washington, May the 1st and 2nd. His subject was "A Differentiation of the Polymorphonuclear Neutrophile Indicating Infection".

Dr. and Mrs. James McLean Rogers

And their three children, after a visit to relatives in Virginia and North Carolina,

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sailed early in May from New York for their home in Korea. Dr. Rogers is an alumnus of the Medical College of Virginia and has been for about ten years in charge of Alexander Hospital of the Southern Presbyterian Church, at Soonchun, Korea. After stopping at a number of places, they expect to reach their home on July the 5th.

Trachoma Prevention Work of Public Health Service.

For several years, this Service has been maintaining small hospitals for the treatment of trachoma at strategic points in the affected area. At present such hospitals are being conducted in Kentucky, Tennessee and Missouri with the financial and moral cooperation of those states. Much good has been accomplished by this work. One of the most spectacular cases cited to show the economic as well as the humanitarian value of the work is that of a man who was led into one of the hospitals anl was for all practical purposes completely blind. After three months' treatment he returned home with good working vision and at last reports was earning $100.00 per week as an expert machinist.

Evidence obtained indicates that trachoma still exists to a dangerous extent in several states, though it is not uniformly prevalent throughout any state. Resurveys conducted from time to time show the beneficial effect of trachoma eradicative work. The trachoma hospital for the Public Health Service located at Richmond, Ky., equipped to care for about thirty patients, makes trachoma treatment available to an enormous area in eastern Kentucky where trachoma is still quite prevalent.

Records show that in the State of Missouri, which has a Blind Pension Law, 3,152 pensions were operative during one year at a cost to the State of $200,000. Of these pensioners, 637, or 20.2 per cent, were blind because of trachoma. The cost of this disease in pensions alone in Missouri was, therefore, more than $40,000 in a single year.

Dr. James W. Keever,

Recently resident physician at Pine Camp Hospital, Richmond, Va., has moved to Hickory, N. C., where he is engaged in general practice. He is also paying especial attention to diseases of the lungs. Dr. Keever is a member of the class of '27, Medical College of Virginia, and was formerly assistant resident in medicine at the Medical College of Virginia Hospitals.

Psychiatric Clinics for Children in the United States.

There are approximately 470 psychiatric clinics for children in 31 States, sponsored by a great number of institutions and agencies. More than 40,000 childen were examined and treated in these clinics during the past year.

Portland Session of A. M. A.

Everything is progressing splendidly for the annual meeting of the American Medical Association in the lovely city of Portland, Ore., July the 8th to 12th, inclusive. The local committee has arranged for side trips on the day following the close of the scientific sessions, to see something of the wonderful country. Numerous groups are arranging for special trips to and from Portland for the personal contacts. One of the latest of which we have received notice is the "Golf Special" which will be operated from Chicago to Portland and return for doctors, their families and friends. Dr. J. P. DeWitt, 112 Shorb Ave., N. W., Canton, Ohio, will be glad to answer inquiries in regard to this trip.

Whether or not doctors intend to avail themselves of the opportunity to play golf, this is a wonderful opportunity to see some of the country's loveliest spots and the scientific sessions will also add to the interest of the trip. Don't forget the dates—July 8th, 9th, 10th, 11th and 12th.

The West Virginia State Medical Association

Will hold its annual meeting in Martinsburg, May 21st, 22nd and 23rd, under the presidency of Dr. Harry M. Hall, of Wheeling. As usual, this society has arranged an excellent program and a good time is in store for those who attend. Mr. Joe W. Savage, executive secretary, Professional Building, Charleston, W. Va., will gladly supply information about this meeting.

Dr. Hugh H. Trout,

Roanoke, Va., by invitation addressed the Ohio County Medical Society at its meeting at Wheeling, W. Va., March the 29th. His subject was "New Principle in Treatment of Ulcers Due to Varicose Veins and Lymphatic Blockage" and this was illustrated with moving pictures.

To Head School of Dentistry, M. C. V.

Dr. Harry Bear has accepted the deanship of the school of dentistry, Medical College of Virginia, Richmond, as of July 1, 1929. Doctor Bear is at present professor of exodontia and the principles of practice of that institution. He is also one of the vice-presidents of the American Dental Association. He will succeed Dean R. D. Thornton, who has resigned to return to private practice at Toronto, Canada.

Dr. Douglas Vanderhoof,

Richmond, Va., has been appointed by Governor Byrd as a member of the Board of Visitors of the Medical College of Virginia to fill a vacancy created by death of one of its members. Dr. Vanderhoof is now professor of clinical medicine at the College and his appointment to the Board will mean the surrender of his teaching function.

Dr. W. W. Wilkinson,

La Crosse, Va., has also been appointed by Governor Byrd to the Board of Visitors of the Medical College of Virginia to succeed the late Dr. Joseph M. Burke.

The Medical Society of the State of North Carolina,

At its meeting held in Greensboro, the latter part of April, decided to hold its 1930 meeting at Pinehurst. Dr. L. A. Crowell, of Lincolnton, was elected president, and Drs. William B. Murphy, Snow Hill, William E. Warren, Williamston, and Noah B. Adams, Murphy, vice-presidents. Dr. L. B. McBrayer, Southern Pines, continues as secretary-treasurer.

The Thomas William Salmon Memorial

Has recently been established in honor of the late Dr. Thomas W. Salmon, former professor of Psychiatry of Columbia University and Medical Director of the National Committee for Mental Hygiene. The purpose of this memorial is to provide recognition to the scientist who has made the greatest contribution in the fight against mental diseases during each year. Awards are to be national and international and will provide for the wider dissemination of the knowledge of mental hygiene and insanity through cooperation with the New York Academy of Medicine, in whose hands the administration of the $100,000 fund is to be placed.

For additional information, address Dr. C. C. Burlingame, Room 807, 17 East 42nd Street, New York, N. Y.

The Virginia State Dental Association,

At its annual meeting held in Danville, the first of this month, elected Dr. R. F. Simmons, Norfolk, president-elect, and re-elected Dr. A. M. Wash, Richmond, secretary-treasurer. Dr. J. E. John, Roanoke, succeeded to the presidency.

The American College of Physicians,

At its meeting in Boston, early in April, selected Minneapolis, Minn., for its next annual meeting place. Dr. John H. Musser, New Orleans, was installed as president. Dr. Sydney R. Miller, Baltimore, was elected president-elect and Dr. George M. Piersol, Philadelphia, secretary.

Dr. and Mrs. A. D. Parson

And daughter, Alyce Frances, have returned to their home at Raven, Va., after sometime spent in New Orleans, where Dr. Parson took a special course in urology at Tulane University.

Addresses U. Va. Medical Society.

Dr. Walter J. Highman, associate professor of dermatology at Columbia University, College of Physicians and Surgeons, New York, was the principal speaker before the University of Virginia Medical Society at its meeting on April the 15th. Dr. Highman's paper on "Sophism in Dermatology" will shortly appear in the MONTHLY.

The National Tuberculosis Association

Will hold its annual meeting in Atlantic City, May 27-30th, inclusive. Headquarters office of this Association are at 370 Seventh Avenue, New York, N. Y.

New Dean of Georgetown University School of Medicine.

Dr. John Foote, Washington, D. C., for a number of years professor of diseases of children at the Georgetown University School of Medicine, has been appointed dean of that school, succeeding Dr. George M. Kober, who has been made dean emeritus and a member of the board of regents.

Dr. Caleb S. Stone, Jr.,

Now on the surgical service at Barnes Hospital, St. Louis, Mo., will shortly come to Virginia to be resident surgeon at the University Hospital, University, Va.

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The American Heart Association, Inc.,

Will hold its scientific session in Portland, Ore., on July the 9th, during the meeting of the American Medical Association. Further information may be obtained from the executive secretary, Dr. I. C. Riggin, at 370 Seventh Avenue, New York, N. Y.

The Medical Association of the Valley of Virginia

Will hold its regular semi-annual meeting in Clifton Forge, Va., on May the 23rd, at which time an interesting program will be presented. Dr. E. R. Miller, Harrisonburg, is president, and Dr. J. F. Fulton, Staunton, secretary.

Obituary Record

Dr. Joseph Martin Burke,

For twenty-seven years chief surgeon of the Seaboard Air Line Railway, died at his home in Norfolk, Va., April the 5th, after having been in bad health for about a year. Dr. Burke was born in Washington, D. C., sixty-seven years ago and studied medicine at the Medical College of Virginia, Richmond, from which he obtained his diploma in 1895. He had been a member of the Medical Society of Virginia since the Fall of that year. Prior to moving to Norfolk, a few years ago, Dr. Burke made his home in Petersburg, Va., and held a prominent place in the social and professional activities of that place. He is survived by five children, one of them being Dr. A. A. Burke, of Norfolk, Va.

The Petersburg Medical Faculty at a meeting on April 6th, adopted the following resolutions on the death of Dr. Burke:

RESOLVED THAT:

WHEREAS, our Heavenly Father, in His divine providence, has seen fit to take from our midst one of our colleagues, Doctor Joseph M. Burke, of Norfolk, Virginia; and

WHEREAS, Doctor Burke was for many years a member of the Petersburg Medical Faculty and did in this community great good as a physician and attained high accomplishments as Chief Surgeon of the Seaboard Air Line Railroad, while located here, Therefore,

BE IT RESOLVED, That we, the members of the Petersburg Medical Faculty, do hereby express our deep sorrow at the loss of so great a physician and so valuable a friend, and wish to express our sincere sympathy to his family and relatives;

That the Petersburg Medical Faculty attend the funeral service in a body;

That a copy of these resolutions be placed on the minute book of the Petersburg Medical Faculty, published in the local newspaper, in the VIRGINIA MEDICAL MONTHLY, and sent to his family.

WRIGHT CLARKSON, *Chairman.*
L. S. EARLY,
R. A. MARTIN,
E. W. YOUNG, *President.*

Dr. Rees Bowen Gillespie,

Member of the Medical Society of Virginia, died suddenly on April the 4th, at a hospital in New Orleans, his death being attributed to complications following a recent attack of influenza. He was a native of Tazewell, Va., and sixty-eight years of age. Dr. Bowen was a graduate of the Medical College of Virginia in the class of '84 and practiced for some years in Southwestern Virginia before joining the U. S. Public Health Service. For several years past, he had been located at Tampa Bay Quarantine Station. His second wife and several children survive him.

Dr. Benjamin L. Dillard,

Prominent physician of Albemarle County, died suddenly at his home at Scottsville, Va., at midnight of April the 15th. Dr. Dillard was seventy-one years of age and studied medicine at the University of Maryland, from which he graduated in 1882. He was formerly a member of the Medical Society of Virginia. Several children survive him.

Dr. W. B. Dodge,

Well known physician of Stuart's Draft, Va., died at the wheel of his automobile, April the 6th, while engaged in conversation with a friend. Though he had not been well for a month, he had continued active with his work to the end. Dr. Dodge, who was sixty-eight years of age, graduated from the Hospital College of Medicine, Louisville, Ky., in 1884. He had practiced in Augusta County for nearly forty-five years and was a surgeon for the Norfolk and Western Railway. His wife and two sons survive him.

Dr. Charles E. de M. Sajous,

Widely known physician, author of numerous medical books and professor of applied endocrinology in the University of Pennsylvania Graduate School of Medicine, died at his home in Philadelphia, April the 27th, aged seventy-six years. He was graduated from Jefferson Medical College in 1878.